



← Click here to return to the Volume II Menu

D

---

Air Quality

# APPENDIX D – AIR QUALITY

## D.1 NONRADIOLOGICAL AIR QUALITY

This appendix supplements the analytical results presented in the Site-Wide Environmental Impact Statement (SWEIS) main text, Sections 5.3.7, 5.4.7, and 5.5.7. Modeling inputs and assumptions support the results for the nonradiological air quality environmental consequences. Chemical screening and refined analysis results are presented for receptor locations in the vicinity of Sandia National Laboratories/New Mexico (SNL/NM). The maximum chemical concentrations generated by an SNL/NM activity are calculated for selected receptor locations.

Site-specific emissions from SNL/NM are modeled in accordance with the guidelines presented in the U. S. Environmental Protection Agency (EPA) *Guideline on Air Quality Models* (40 *Code of Federal Regulations* [CFR] Part 51, Appendix W), the New Mexico Air Quality Bureau *Dispersion Modeling Guidelines* (NMAPCB 1996), and the Albuquerque Environmental Health Department (AEHD) *Permit Modeling Guidelines* (AEHD 1995).

Impacts were estimated from criteria pollutant emissions, chemical pollutant emissions, mobile (vehicular) source emissions, and open burning by modeling the emissions associated with each alternative during normal operations and comparing the resulting pollutant concentrations to the National Ambient Air Quality Standards (NAAQS), the New Mexico Ambient Air Quality Standards (NMAAQS), the Albuquerque/Bernalillo County Air Quality Control Board (A/BC AQCB) regulations for criteria pollutants, and guidelines for chemical concentrations. These regulations and guidelines represent conditions to which it is believed that nearly all of the general public may be repeatedly exposed, day after day, without adverse health effects.

### D.1.1 Air Quality Dispersion Models

The EPA's *Industrial Source Complex Air Quality Dispersion Model* (*ISCST3*) was used to estimate the criteria pollutant concentrations from stationary sources at SNL/NM (EPA 1995a). This model was selected as the most appropriate model to perform the air dispersion modeling analysis from continuous emission sources because it is designed to support the EPA regulatory modeling program and is capable of handling multiple sources, including different source types. This model was

also used to estimate chemical concentrations from emissions of chemicals from SNL/NM facilities. It estimates pollutant concentrations from normal operations at SNL/NM from stationary sources.

The *Mobile Source Emission Factor (MOBILE5a)* computer model (EPA 1994), which is the EPA-approved model for estimating emission factors from mobile sources, in conjunction with state implementation plans, was used to estimate carbon monoxide emissions from vehicular traffic. Emissions of carbon monoxide from vehicles represent the greatest contribution to overall carbon monoxide emissions in the region of influence (ROI). The model calculates emission factors in grams per mile, from which annual carbon monoxide emissions from mobile sources are calculated.

The *Open Burn/Open Detonation Dispersion Model* (*OBODM*) was used to evaluate the potential air quality impacts of open-air burning (Bjorklund et al. 1997). *OBODM* predicts the downwind transport and dispersion of pollutants using cloud rise and dispersion model algorithms. The model is used to estimate the pollutant concentrations from open burning at the Fire Testing Facility.

### D.1.2 Criteria Pollutants

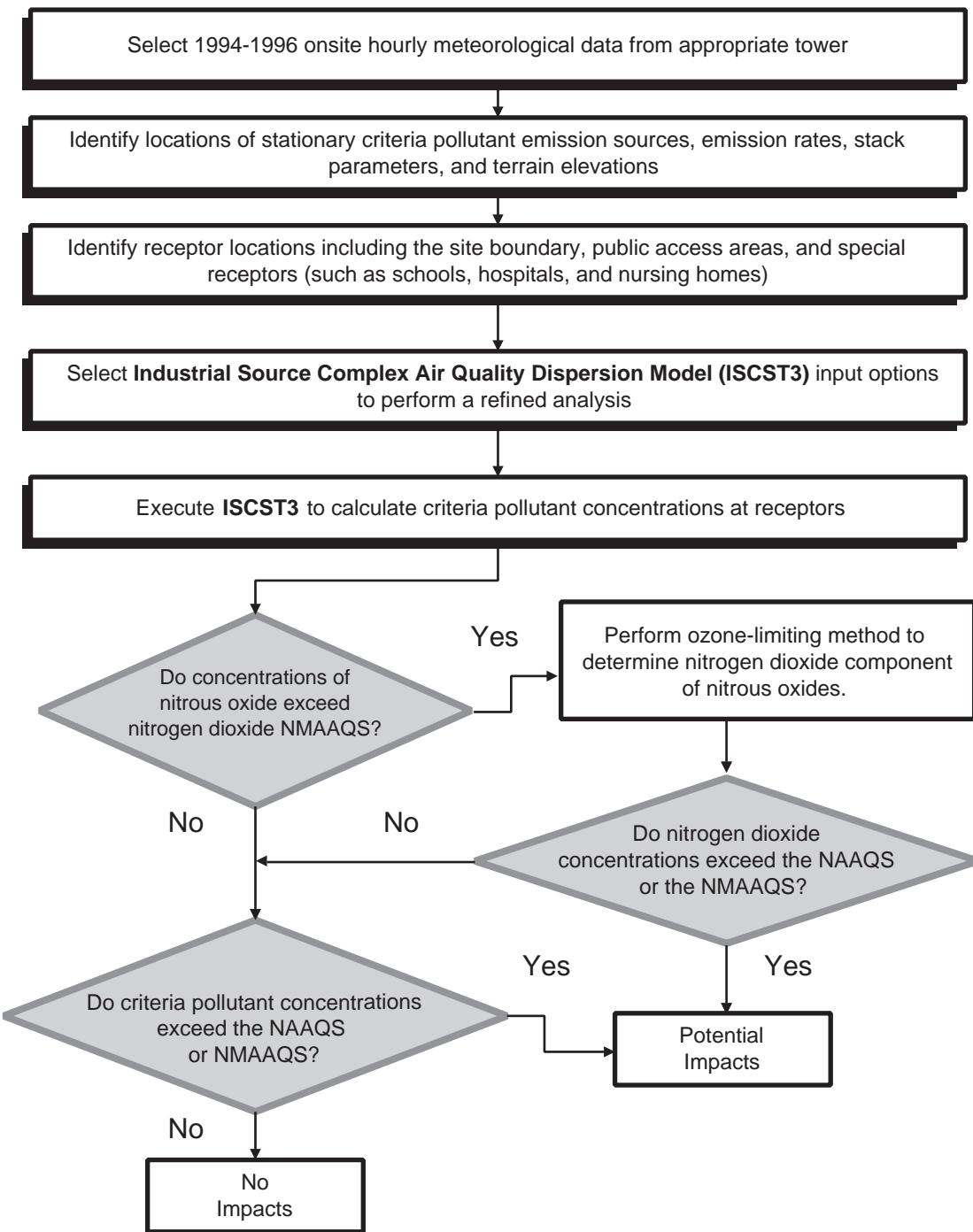
The criteria pollutants modeled using *ISCST3* include carbon monoxide, sulfur dioxide, nitrogen dioxide, total suspended particulates, and particulate matter equal to or less than 10  $\mu\text{m}$  diameter ( $\text{PM}_{10}$ ). Concentrations of lead, ozone, hydrogen sulfide, and total reduced sulfur are provided from monitoring data where available. As of September 16, 1997, in addition to the  $\text{PM}_{10}$  NAAQS, a new NAAQS became effective for particulate matter equal to or less than 2.5 microns in diameter ( $\text{PM}_{2.5}$ ). This new standard will not require imposition of local area controls until 2005, and compliance determinations will not be required until 2008. Additionally, the EPA revised the NAAQS and associated reference method for determining ozone attainment on July 19, 1997. This standard will also be applicable to SNL/NM.

Figure D.1-1 presents the process used for evaluating the criteria pollutant emissions from SNL/NM.

The estimated emissions of criteria pollutants under the alternatives are modeled using the EPA-recommended *ISCST3* (dated 97363) model to estimate concentrations of criteria pollutants at or beyond the SNL/NM

### Criteria Pollutants

Objective: Determine if concentrations of criteria pollutants from SNL/NM comply with the National Ambient Air Quality Standards (NAAQS) and New Mexico Ambient Air Quality Standards (NMAAQS)



Source: Original

**Figure D.1–1. Example Flow Chart For Evaluation of Criteria Pollutants**  
*A multi-step process is used to evaluate criteria pollutants.*

boundary, including receptor locations such as public access areas (for example, the National Atomic Museum, hospitals, and schools). For those criteria pollutants for which emission data are not available, onsite monitoring data are presented in lieu of modeling results.

#### D.1.2.1 Emission Sources

The criteria pollutant emission sources at SNL/NM modeled using *ISCS3* were the following stationary combustion sources located in Technical Area (TA)-I:

- steam plant
- electric power generator plant
- boiler and emergency generator in Building 701
- 600-kW-capacity generator in Building 870b

Sequential hourly emissions, representing actual emissions for 1996 plus estimated emissions for the boiler and emergency generator in Building 701 and the 600-kW-capacity capacity generator in Building 870b, were used as emission source input to *ISCS3* to estimate criteria pollutant concentrations under the No Action Alternative. In addition to actual emission source locations, exhaust parameters (such as height, diameter, temperature, and flow rate) were based on engineering estimates from actual operating data for those existing emission sources. For future emission sources included in the No Action Alternative modeling, engineering estimates of emissions were made using the EPA *Compilation of Air Pollutant Emission Factors, Volume I* (AP-42) (EPA 1995b). Table D.1-1 presents annual average emission rates for criteria pollutant sources at SNL/NM.

#### D.1.2.2 Stack Parameters

Based upon the daily fuel usage and operating load conditions, the hourly emission rates, gas exit velocities, and exit temperatures for each of the steam plant boilers were determined. These hourly emission parameters were used as input into the *ISCS3* model. Table D.1-2 presents an example of the source parameters for the steam plant boilers during a 100 percent load condition. Gas exit velocities vary between natural gas and #2 fuel oil usage.

Table D.1-3 presents the source parameters used for modeling purposes for Building 862 generators.

#### D.1.2.3 Receptors

Receptor locations include special receptors where concentrations of the public, children, and the infirmed are of special interest, such as public access areas, hospitals, and schools located beyond the SNL/NM boundary. Specific special receptors are included in the following locations:

- Child Development Center-East (Special)
- Child Development Center-West (Special)
- Coronado Club (Special)
- Golf Course
- Kirtland Air Force Base (KAFB) Housing
- Kirtland Elementary School (Special)
- Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC)
- Lovelace Hospital (Special)
- National Atomic Museum (Special)
- Riding Stables
- Sandia Base Elementary School (Special)
- Shandii Day Care Center (Special)
- Veterans Affairs Medical Center (Special)
- Wherry Elementary School (Special)

Universal transverse mercator (UTM) coordinates for each of the receptor locations were input into the model to determine the pollutant concentrations at that location. The maximum concentration for each criteria pollutant modeled for each of the averaging periods for five years of meteorological data is presented in Section 5.3.7.

#### D.1.2.4 Meteorological Data

Sequential hourly meteorological data for 1995 and 1996 from tower A15, and for 1994, 1995, and 1996 from tower A21, were used as model input to determine the maximum pollutant concentrations based on any one year of meteorology. Data from these meteorological towers were used because of their proximity to the emission sources. Figures D.1-2 and D.1-3 present the annual wind roses for meteorological tower A15, for 1995 and 1996, and for meteorological tower A21, for 1994, 1995, and 1996. In addition, mixing height data from the Albuquerque International Sunport were incorporated with the onsite data to provide a single input file containing all of the above data.

**Table D.1–1. Annual Average Emission Rates for Criteria Pollutant Emissions from SNL/NM Sources**

| SOURCE           | FUEL        | FUEL USAGE<br>(scf/yr) | UNIT CAPACITY<br>(MMbtu/hr) | CARBON MONOXIDE          |            | NITROGEN DIOXIDE         |            | SULFUR DIOXIDE           |            | PARTICULATE MATTER       |            | TSP                      |            |
|------------------|-------------|------------------------|-----------------------------|--------------------------|------------|--------------------------|------------|--------------------------|------------|--------------------------|------------|--------------------------|------------|
|                  |             |                        |                             | EF (lb/ $10^6$ ft $^3$ ) | ER (g/sec) | EF (lb/ $10^6$ ft $^3$ ) | ER (g/sec) | EF (lb/ $10^6$ ft $^3$ ) | ER (g/sec) | EF (lb/ $10^6$ ft $^3$ ) | ER (g/sec) | EF (lb/ $10^6$ ft $^3$ ) | ER (g/sec) |
| <b>BOILERS</b>   |             |                        |                             |                          |            |                          |            |                          |            |                          |            |                          |            |
| <i>Boiler #1</i> | Natural gas | 115,932,505            | 51.550                      | 35.00                    | 0.2273     | 140.00                   | 0.9093     | 0.60                     | 0.0039     | 14.00                    | 0.0909     | 14.00                    | 0.0909     |
| <i>Boiler #2</i> | Natural gas | 83,554,552             | 39.100                      | 35.00                    | 0.1724     | 140.00                   | 0.6897     | 0.60                     | 0.0030     | 14.00                    | 0.0690     | 14.00                    | 0.0690     |
| <i>Boiler #3</i> | Natural gas | 48,941,341             | 33.480                      | 35.00                    | 0.1476     | 140.00                   | 0.5905     | 0.60                     | 0.0025     | 14.00                    | 0.0590     | 14.00                    | 0.0590     |
| <i>Boiler #5</i> | Natural gas | 142,776,286            | 84.63                       | 35.00                    | 0.3732     | 140.00                   | 1.4929     | 0.60                     | 0.0064     | 14.00                    | 0.1493     | 14.00                    | 0.1493     |
| <i>Boiler #6</i> | Natural gas | 349,389,902            | 142.14                      | 35.00                    | 0.6268     | 140.00                   | 2.5074     | 0.60                     | 0.0107     | 14.00                    | 0.2507     | 14.00                    | 0.2507     |
| 962              | Natural gas | 118,260,000            | 13.5                        | 35.00                    | 0.1191     | 140.00                   | 0.4763     | 0.60                     | 0.0020     | 14.00                    | 0.0476     | 14.00                    | 0.0476     |
| SOURCE           | FUEL        | FUEL USAGE<br>(gal/yr) | UNIT CAPACITY<br>(MMbtu/hr) | CARBON MONOXIDE          |            | NITROGEN DIOXIDE         |            | SULFUR DIOXIDE           |            | PARTICULATE MATTER       |            | TSP                      |            |
|                  |             |                        |                             | EF (lb/ $10^3$ gal)      | ER (g/sec) |
| <i>Boiler #1</i> | #2 fuel oil | 2,700,000              | 87.256                      | 5.00                     | 0.3883     | 20.00                    | 1.5534     | 31.24                    | 2.4264     | 1.00                     | 0.0777     | 2.00                     | 0.1553     |
| <i>Boiler #2</i> | #2 fuel oil | 2,700,000              | 87.256                      | 5.00                     | 0.3883     | 20.00                    | 1.5534     | 31.24                    | 2.4264     | 1.00                     | 0.0777     | 2.00                     | 0.1553     |
| <i>Boiler #3</i> | #2 fuel oil | 2,700,000              | 87.256                      | 5.00                     | 0.3883     | 20.00                    | 1.5534     | 31.24                    | 2.4264     | 1.00                     | 0.0777     | 2.00                     | 0.1553     |
| <i>Boiler #5</i> | #2 fuel oil | 4,023,000              | 130.09                      | 5.00                     | 0.5786     | 20.00                    | 2.3146     | 31.24                    | 3.6153     | 1.00                     | 0.1157     | 2.00                     | 0.2315     |
| <i>Boiler #6</i> | #2 fuel oil | 7,360,000              | 237.97                      | 5.00                     | 1.0586     | 20.00                    | 4.2344     | 31.24                    | 6.6142     | 1.00                     | 0.2117     | 2.00                     | 0.4234     |

**Table D.1–1. Annual Average Emission Rates for Criteria Pollutant Emissions from SNL/NM Sources (concluded)**

| SOURCE            | FUEL        | FUEL           | UNIT                | CARBON MONOXIDE  |            | NITROGEN DIOXIDE |            | SULFUR DIOXIDE   |            | PARTICULATE MATTER |            | TSP              |            |
|-------------------|-------------|----------------|---------------------|------------------|------------|------------------|------------|------------------|------------|--------------------|------------|------------------|------------|
|                   |             | USAGE (gal/yr) | CAPACITY (MMbtu/hr) | EF (lb/MMbtu/hr) | ER (g/sec) | EF (lb/MMbtu/hr) | ER (g/sec) | EF (lb/MMbtu/hr) | ER (g/sec) | EF (lb/MMbtu/hr)   | ER (g/sec) | EF (lb/MMbtu/hr) | ER (g/sec) |
| <b>GENERATORS</b> |             |                |                     |                  |            |                  |            |                  |            |                    |            |                  |            |
| 870B              | #2 fuel oil | 20,076         | 2.047               | 0.85             | 0.6091     | 3.20             | 2.2929     | 0.222            | 0.1591     | 0.10               | 0.0717     | 0.07             | 0.0502     |
| 862               | #2 fuel oil | 80,304         | 8.188               | 0.85             | 2.4362     | 3.20             | 9.1717     | 0.222            | 0.6363     | 0.10               | 0.2866     | 0.07             | 0.2006     |
| 605               | #2 fuel oil | 13,049         | 1.331               | 0.95             | 0.4425     | 4.41             | 2.0539     | 0.29             | 0.1351     | 0.31               | 0.1444     | 0.35             | 0.1630     |
| 701               | #2 fuel oil | 16,730         | 1.706               | 0.85             | 0.5076     | 3.20             | 1.9108     | 0.222            | 0.1326     | 0.10               | 0.0597     | 0.07             | 0.0418     |

Source: SNL/NM 1997a

EF: emission factor

ER: emission rate

g/sec: grams per second

gal: gallon

lb/ft<sup>3</sup>: pounds per cubic foot

lb/MMbtu: pounds per Million British Thermal Units

scf: standard cubic feet

TSP: total suspended particulates

Notes: 1) Heating Value: Natural Gas = 1,000 btu/scf; #2 Fuel Oil = 141,636 btu/gal

2) Emission rates for natural gas are based on boilers operating 2,249, 2,137, 1,462, 1,687, and 2,458 hours for boilers 1, 2, 3, 5, and 6, respectively.

3) Emission rates for #2 fuel oil are based on boilers operating 4,380 hours.

4) Emission rates for generators are based on generators operating 500 hours per year.

**Table D.1–2. SNL/NM Steam Plant Source Parameters**

| BOILER NUMBER | STACK HEIGHT (m) | STACK DIAMETER (m) | EXIT VELOCITY (m/sec)                | EXIT TEMPERATURE (°K) | UTM-E (m) | UTM-N (m) | BASE ELEVATION (ft) |
|---------------|------------------|--------------------|--------------------------------------|-----------------------|-----------|-----------|---------------------|
| 1             | 19.8             | 1.14               | 13.9 <sup>a</sup> /12.8 <sup>b</sup> | 391                   | 358,672   | 3,879,647 | 5,405               |
| 2             | 19.8             | 1.14               | 14.4 <sup>a</sup> /12.9 <sup>b</sup> | 408                   | 358,680   | 3,879,647 | 5,405               |
| 3             | 19.8             | 1.14               | 14.5 <sup>a</sup> /13.7 <sup>b</sup> | 432                   | 358,694   | 3,879,647 | 5,405               |
| 5             | 19.8             | 1.52               | 13.4 <sup>a</sup> /12.4 <sup>b</sup> | 468                   | 358,708   | 3,879,647 | 5,405               |
| 6             | 19.8             | 1.52               | 31.5 <sup>a</sup> /26.9 <sup>b</sup> | 555                   | 358,718   | 3,879,639 | 5,405               |

Source: SNL/NM 1997a

°K: degrees Kelvin

ft: feet

m: meter

m/sec: meters per second

UTM-N: Universal Transverse Mercator-N

UTM-E: Universal Transverse Mercator-E

<sup>a</sup> During natural gas usage<sup>b</sup> During fuel oil usage**Table D.1–3. SNL/NM Building 862 Generators Source Parameters**

| STACK HEIGHT (m) | STACK DIAMETER (m) | EXIT VELOCITY (m/sec) | EXIT TEMPERATURE (°K) | UTM-E (m) | UTM-N (m) | ELEVATION (ft) |
|------------------|--------------------|-----------------------|-----------------------|-----------|-----------|----------------|
| 11.9             | 0.204              | 85.3                  | 489                   | 359,205   | 3,879,742 | 5,397          |

Source: SNL/NM 1997a

°K: degrees Kelvin

ft: feet

m: meter

m/sec: meters per second

UTM-E: Universal Transverse Mercator-E

UTM-N: Universal Transverse Mercator-N

### D.1.2.5 Model Assumptions

Model assumptions include using the regulatory default options that are identified in Appendix A of the *Guideline on Air Quality Models* (Revised) (EPA 1987), and include the following:

- use stack-tip downwash (except for Schulman-Scire downwash),
- use buoyancy-induced dispersion (except for Schulman-Scire downwash),
- do not use gradual plume rise (except for building downwash),
- use the calms processing routines,
- use upper-bound concentration estimates for sources influenced by building downwash from super-squat buildings,
- use default wind speed profile exponents, and
- use default vertical potential temperature gradients.

Other assumptions include

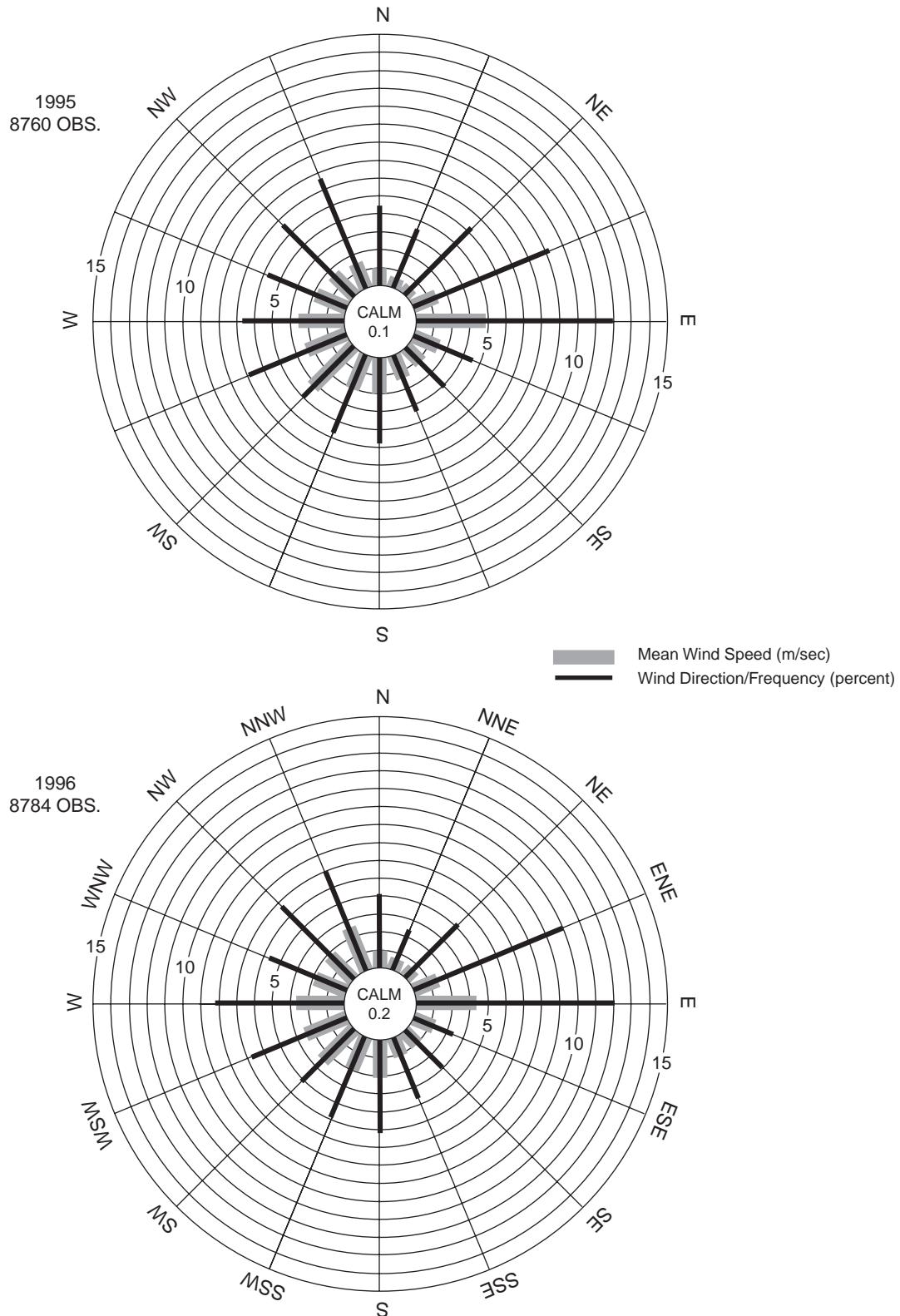
- hourly emission rates for natural gas-fired boilers,

- constant emission rates for #2 fuel oil-fired boilers and generators,
- constant emission rates for chemical emissions,
- building downwash option for criteria pollutants, and
- rural dispersion.

### D.1.2.6 Methodology

The modeling of nitrogen oxides follows a tiered approach to determine the concentration of nitrogen dioxide as a component of nitrogen oxides. Nitrogen dioxide is one of several forms of nitrogen oxides resulting from the combustion of fossil fuels. Federal and state criteria pollutant standards specify nitrogen dioxide as the form of nitrogen oxides for which the standards apply. The emissions from combustion of fossil fuel provided as input into *ISCST3* are those of nitrogen oxides.

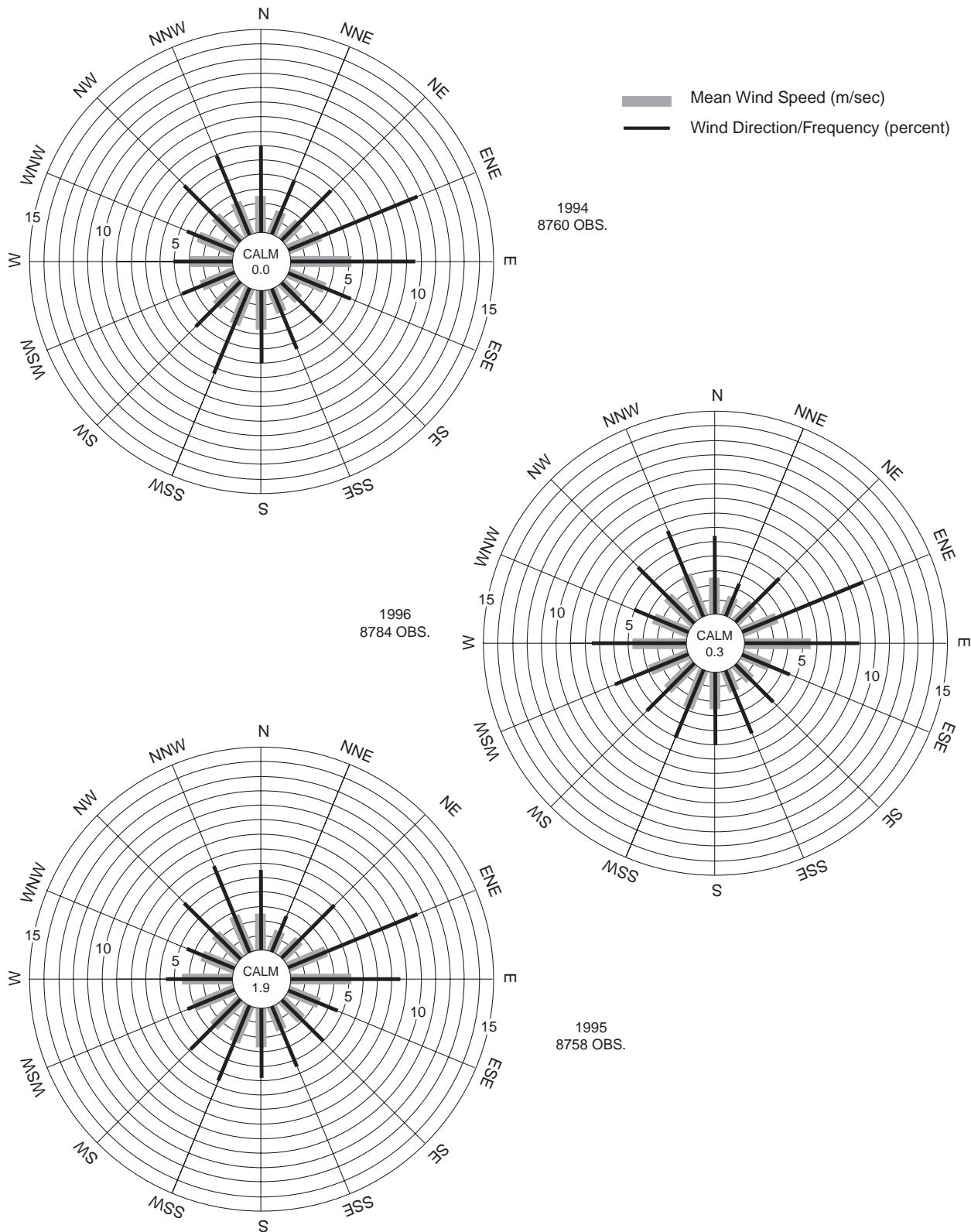
Modeling results for nitrogen oxides, using *ISCST3* for the 24-hour and annual averaging periods, are 0.19 ppm (300 µg/m<sup>3</sup>) and 0.02 ppm (28 µg/m<sup>3</sup>), respectively. The NMAAQQS standards for nitrogen dioxide for the 24-hour and annual averaging periods are 0.10 ppm



Source: SNL/NM 1998j

### Figure D.1–2. Annual Wind Rose for Tower A15 at 10-m Level, 1995–1996

*Two years of meteorological data, including wind speed and direction, from Tower A15 (at the 10-m level), were used to determine the maximum pollutant concentration.*



Source: SNL/NM 1998j

### Figure D.1–3. Annual Wind Rose for Tower A21 at 10-m Level, 1994–1996

*Three years of meteorological data, including wind speed and direction, from Tower A21 (at the 10-m level), were used to determine maximum pollutant concentrations.*

(156 µg/m<sup>3</sup>) and 0.05 ppm (78 µg/m<sup>3</sup>), respectively. The modeling results indicate that the nitrogen oxides 24-hour concentrations exceed the NMAAQS standard for nitrogen dioxide. If the nitrogen oxides concentration is below the NMAAQS standard for nitrogen dioxide, then no further analysis is necessary to show compliance with the standard. Since the nitrogen oxides concentration is above the standard, a second step must be undertaken to show compliance.

The New Mexico Air Quality Bureau has approved the ozone limiting method (OLM) to estimate nitrogen dioxide concentrations in modeled nitrogen oxides emissions. The EPA model *ISC3\_OLM* (Version 96.113) is used to implement the OLM.

The OLM is employed to calculate the nitrogen dioxide component of the nitrogen oxides concentration. The OLM requires representative hourly ozone concentrations to be input into the model. These data are obtained from monitoring station 2R, located in the south valley of the city of Albuquerque approximately 1 mi west of the Rio Grande and 3 mi south of downtown (Figure 4.9–2). This monitoring location is upwind from the criteria pollutant emission sources at SNL/NM and is, therefore, representative of the background ozone in the area. The OLM also requires that background nitrogen dioxide concentrations be added to the model-calculated nitrogen dioxide concentrations to obtain a representative concentration of nitrogen dioxide. Monitoring station 2R does not measure nitrogen dioxide; therefore, the maximum 24-hour average concentration and the annual average concentration of nitrogen dioxide, measured in 1996 at monitoring station 2ZR, are added to the respective modeled concentrations. Station 2ZR is collocated with monitoring station 2ZQ in the city of Rio Rancho, west of Albuquerque, a rapidly growing area on the city's west side, and provides a reasonable background estimate of nitrogen dioxide not influenced by SNL/NM emissions. Figure 4.9–2 shows the location of this monitoring station.

### D.1.3 Chemical Pollutants

The pollutants and laboratory operations that may cause significant air quality and human health impacts at SNL/NM were identified through a progressive series of screening steps, each step involving fewer pollutants that were then screened by methods that involved more rigorous and realistic emission rates than the step before. This approach, consistent with EPA guidance, focused

detailed analyses only on those chemicals that had a reasonable chance of being of concern.

The objective was to determine potential impacts from routine emissions (emissions occurring daily from ongoing normal operations at SNL/NM). Databases available at SNL/NM, identifying the thousands of chemical products used at SNL/NM, were screened, and the potential sources of routine chemical air emissions were determined.

First, all site-wide chemical databases available for SNL/NM were identified. The three sources of chemical data for SNL/NM are the Chemical Information System (CIS), Hazardous Chemical Purchases Inventory (HCPI), and CheMaster. Each was developed for a slightly different purpose, has some specific and/or unique information, and has overlapping information. No database was complete enough to use exclusively; therefore, the data are used collectively. CIS is the most current, has annual purchases by building number, is versatile in the formatting of the data, and tracks 90 percent of all chemical purchases by SNL/NM. HCPI provides the chemical product ingredients regulated as hazardous air pollutants (HAPs), and toxic air pollutants (TAPs), as well as volatile organic compound (VOC) ingredients. It also captures the “just in time” (JIT) chemical purchases not tracked in CIS. The CheMaster database contains a 1996 chemical inventory collected from a wall-to-wall survey performed at SNL/NM to determine the maximum inventories of hazardous chemicals. The chemical volumes are maximum potential quantities; CheMaster captures older chemical inventories potentially not documented in CIS as a recent purchase. The CheMaster was also used as the source of information needed for the 1997 study identifying the most significant chemical hazards at SNL/NM for emergency planning/emergency response purposes.

At SNL/NM, each chemical (product) purchased is inventoried in the CIS database. The hazardous ingredients of these chemical products are determined and then categorized as HAPs, TAPs or VOCs, as applicable, and tracked by the HCPI database. Large quantities of HAPs, TAPs, or VOCs used and potentially released to the air from routine operations are regulated under the *Superfund Amendments and Reauthorization Act* (SARA) Title III hazardous substance control and reporting requirements (42 United States Code [U.S.C.] §11001). HCPI is in place to meet these annual tracking and reporting requirements. The HCPI database groups and sums the total quantities of individual HAPs, TAPs,

## Ozone Limiting Method

The following is a simplified explanation of the basic chemistry relevant to the ozone limiting method (OLM).

First, the relatively high temperatures typical of most combustion sources promote the formation of nitrogen dioxide by the following thermal reaction:



The OLM assumes that 10 percent of the oxides of nitrogen emission in the exhaust is converted to nitrogen dioxide by this reaction, and no further conversion by this reaction occurs once the exhaust leaves the stack. This assumption is thought to be conservative, as more typically, only 5 percent of the oxides of nitrogen emission is nitrogen dioxide at the stack exit. The remaining 90 percent of the oxides of nitrogen emission is assumed to be nitric oxide.

As the exhaust leaves the stack and mixes with the ambient air, the nitric oxide reacts with ambient ozone to form nitrogen dioxide and molecular oxygen:



The OLM assumes that at any given receptor location, the amount of nitric oxide that is converted to nitrogen dioxide by this reaction is proportional to the ambient ozone concentration. If the ozone concentration is less than the nitric oxide concentration, the amount of nitrogen dioxide formed by this reaction is limited. If the ozone concentration is greater than or equal to the nitric oxide concentration, all of the nitric oxide is assumed to be converted to nitrogen dioxide.

In the presence of radiation from the sun, ambient nitrogen dioxide can be destroyed:



As a conservative assumption, the OLM ignores this reaction.

Another reaction that can form nitrogen dioxide in the atmosphere is the reaction of nitric oxide with reactive hydrocarbons:



The OLM also ignores this reaction. This may be a nonconservative assumption with respect to nitrogen dioxide formation in urban/industrial areas with relatively large amounts of reactive hydrocarbon emissions.

NO: nitric oxide

O: oxygen

$\text{NO}_2$ : nitrogen dioxide

HC: reactive hydrocarbon

$\text{O}_2$ : oxygen

$\text{O}_3$ : ozone

Note: Although not used in the equations above,  $\text{NO}_x$  is known as nitrogen oxides or oxides of nitrogen.

Source: OLM/ARM 1997

and VOCs by name and total quantities per building.

The total pounds of HAPs, TAPs, and VOCs purchased by SNL/NM are reported annually as required by SARA Title III (42 U.S.C. §11001).

To supplement data from CIS and HCPI, a 1997 SNL/NM study for emergency planning/hazards assessment, thoroughly reviewing details of the CheMaster database, was also assessed. The study identified the major chemical hazards at SNL/NM, the

sources of the hazard, and the location of the chemical inventory posing the hazard under a 100 percent release accident scenario. Each chemical entered in CheMaster was evaluated for volatility, dispersibility, toxicity, persistence, volume, flammability, and other chemical properties pertinent to assessing the potential for human exposures and health effects through the air pathway. The major chemical hazards identified for emergency response at SNL/NM were identified. Although

accidental release of chemicals is not applicable to routine air emissions, results of the study were reviewed as a conservative backup to the information contained in the CIS and HCPI. From a human health impacts standpoint, the objective was to provide a second check of what sources of hazardous chemicals exist at SNL/NM.

Approximately 465 chemicals (out of over 25,000 used at SNL/NM) were identified as the potential sources of routine chemical air emissions from SNL/NM's normal operations. This list was individually reviewed for volume and toxicity. Individual facility managers at SNL/NM verified the volumes of chemicals listed and specified any routinely used highly toxic chemicals, applicable to their operations. With this process, it is very unlikely that any major sources of routine chemical air emissions are overlooked by the SWEIS analysis. The final verified list of chemicals considered the potential sources of routine chemical air emissions is published in the SNL/NM Facility Safety Information Document. These amounts of HAPs, TAPs, VOCs, and 1996 inventory amounts of major chemical hazards identified by the emergency planning study were used in the detailed chemical screening process to estimate maximum emission rates and compare them to health risk based chemical-specific threshold emission values (TEVs).

These hazardous chemicals were categorized into two groups, noncarcinogenic chemicals and carcinogenic chemicals, in order to address the differences in health effects. Fifteen carcinogenic chemicals were associated with five facilities; the remaining chemicals were assessed for noncarcinogenic health effects. Each group was evaluated using a screening technique comparing each chemical's estimated emission rate to a health risk-based TEV. As specified by the *National Environmental Policy Act* (NEPA), current dose-to-risk conversion factors and the “best available technology” were used in assessing impacts to human health (Appendix E). Consistent with the human health impacts assessment methodology, appropriate health risk values were used in the chemical screening process to derive chemical-specific TEVs. Because of the different health effects (noncarcinogenic and carcinogenic), two methods were applied to derive chemical-specific TEVs.

Available data including occupational exposure limits (OELs), and Inhalation Unit Risk values were researched for the entire list of 465 chemicals, as applicable. Where dose-to-risk information was unavailable, a risk assessment model could not be applied to obtain a quantitative TEV

for screening purposes. Therefore, some chemicals without OELs, or Inhalation Unit Risk values could not be given a health risk-based screening assessment. This uncertainty in the analysis resulted in a slight underestimation of health risks, but did not affect the overall conclusions of the SWEIS risk analysis. Based on a review of the regulatory literature, there are possible reasons why a chemical would not have a published OEL and/or a dose-response value.

Chemical manufacturers report new chemical information to the EPA according to requirements specified in Section 4 of the *Toxic Substances Control Act* (TSCA) (15 U.S.C. §2601). A 90-day preliminary hazard assessment process determines whether or not further analysis of the chemical will be required and how soon it must be completed. All information implies that a chemical without an OEL or unit risk value is likely to meet one or more of the following conditions:

- it is not used routinely,
- it is not present or used in regulated quantities,
- it will still be controlled according to general Occupational and Safety and Health Administration (OSHA) requirements (personal protective equipment [PPE], labeling, Material Safety Data Sheet [MSDS] recommendations, and so on),
- it is not designated for regulation (based on an interagency regulatory committee determination),
- it is determined not toxic to the environment or human health, or
- it is used for research and development (R&D) or market research only.

A possible condition where a major chemical hazard at SNL/NM could have been overlooked would be a chemical currently in review and not yet given an OEL, reference dose (RfD) or cancer slope factor (CSF), or unit risk value, as appropriate. In that case, the chemical would not yet be in use long enough or in large enough quantities at SNL/NM to be a routine air emission or to allow long-term (chronic) exposures to people. The objective of the SWEIS impact analysis, which is to determine potential health impacts to workers and the public from routine emissions (emissions occurring daily from ongoing normal operations at SNL/NM), is therefore, met. If it were possible, through the SWEIS analysis, to expedite or

evaluate a chemical in this situation, it would not introduce enough difference to the analytical results to affect the overall results of the human health risk assessment. Since these are unregulated chemicals, it also would not affect the overall results of the air quality analysis.

#### D.1.3.1 Noncarcinogenic Chemical Screening

The screening analysis for noncarcinogenic chemicals uses four “industry-recognized” guidelines to determine the most conservative guideline applicable to each chemical. The guidelines are as follows:

- American Conference of Governmental Industrial Hygienists (threshold limit values [TLVs]) (ACGIH 1997)
- OSHA (permissible exposure limits [PELs]) (ACGIH 1997)
- National Institute for Occupational Safety and Health (recommended exposure limits [RELs]) (ACGIH 1997)
- Deutsche Forschungsgemeinschaft (DFG), Federal Republic of Germany, Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (ACGIH 1997).

The minimum guideline value from these references divided by 100 was used as the screening guideline for the noncarcinogenic chemicals. Dividing the guideline by 100 ensures a conservative safety factor for identifying those chemicals of potential public concern. The guideline value divided by 100 is henceforth referred to as OEL/100. Figure D.1–4 presents the process used for evaluating the chemical emissions from SNL/NM.

The second chemical screening level after identifying those noncarcinogenic chemicals contained within SNL/NM databases was to calculate the maximum offsite chemical concentration using an emission rate of 1 g per second in the center of 5 major emitters in TA-I. The maximum 8-hour concentration was calculated using the *ISCST3* model and 5 years of hourly winds and stabilities, with a prototypical stack (33 ft high, 1 ft in diameter, 1.6-ft per second exit velocity, 68°F exit temperature, and a 1-g per second emission rate.)

A TEV was calculated by dividing the OEL/100 for each chemical by the calculated maximum 8-hour concentration for a 1-g per second emission rate. The TEV represents the emission rate that would result in an 8-hour chemical concentration equal to the OEL/100 guideline.

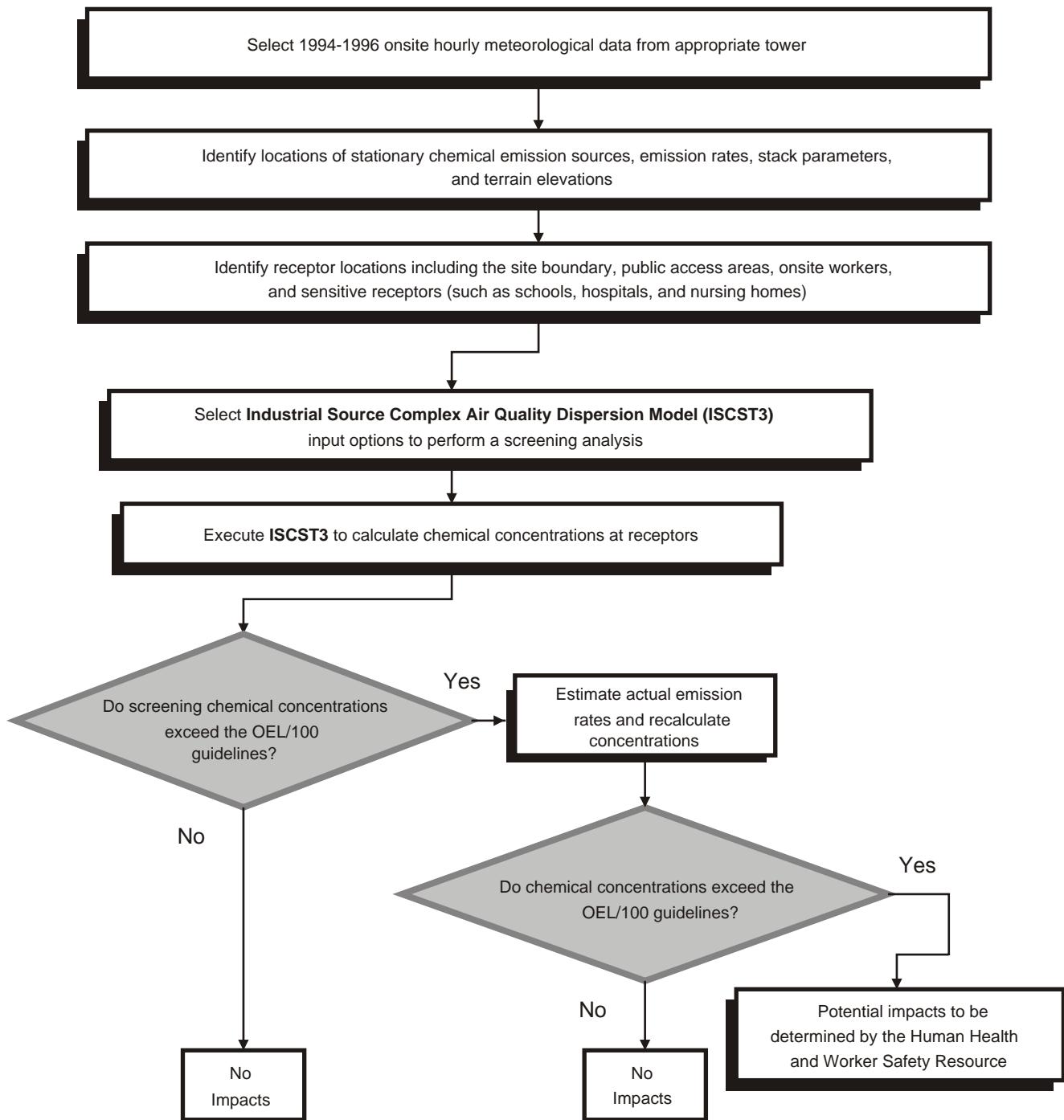
The hypothetical emission rate for each noncarcinogenic chemical was calculated by dividing the 1996 purchased amount in grams by 2,000 hours, converted to seconds, to obtain an emission rate in grams per second. The 2,000 hours represents a 40-hour work week times 50 work weeks per year as the number of hours during which the chemicals are emitted. It is conservatively assumed that 100 percent of the purchased chemicals for 1996 for each facility purchasing chemicals are released to the atmosphere from the facility. An exception to this assumption is made for sulfuric acid emissions from Buildings 858 and 878. These buildings are equipped with scrubbers with a greater than 90 percent control efficiency (Kramer 1993). Credit for these scrubbers is applied to emissions of sulfuric acid by reducing the emissions by 90 percent.

Chemicals not having an OEL were not screened using the TEV method (no TEV could be derived). Instead, a review of the chemicals was performed to assess the potential human health effects to prevent screening out any potential health hazards. A general approach was applied. Under OSHA requirements, all chemicals manufactured must be investigated for toxicity (acute and chronic). Manufacturers are required to provide OELs, as appropriate, for the intended use of the chemical and based on its toxic properties. Therefore, where a chemical has no OEL, it is a reasonable assumption that the chemical's toxic properties do not warrant regulation from chronic (long-term) exposures. Many of the chemicals without OELs are acids, which are chemically not persistent in the environment (they change chemical form rapidly), thereby preventing chronic exposures or even exposures at a distance from the source. These chemicals are acute hazards that are monitored and controlled according to PPE requirements identified on the products MSDSs. Because routine air emissions are associated with larger quantities of chemical use, it is also reasonable to say that chemicals without an OEL, but in small quantities (less than 10 lb), were not associated with routine emissions and did not affect human health by way of the air emissions pathway.

The hypothetical emission rate, based upon chemical purchased amounts, was then compared to the TEV. If the hypothetical emission rate was greater than the TEV, then the chemical concentration resulting from the hypothetical emission rate may exceed the OEL/100 guideline, and the chemical required further analysis to determine whether it was a potential chemical of concern.

### Chemical Air Pollutants

Objective: Determine if concentrations of chemical releases from SNL/NM are less than 0.01 of the occupational exposure limit (OEL/100) guidelines



Source: Original

**Figure D.1–4. Flow Chart for Evaluation of Chemical Air Pollutants**  
*Chemical air pollutants are evaluated using the ISCST3 computer model*

## Tables Key

### SOURCES:

Raw Data: SNL/NM 1998a, SNL/NM 1999a  
TLVs: ACGIH 1997

### ACRONYMS:

|                     |  |
|---------------------|--|
| CAS:                | Chemical Abstracts Service   |
| DF:                 | dispersion factor (airborne concentration per unit release)        |
| EF:                 | emissions factor (fraction that is released of a potential source) |
| ER:                 | emission rate  |
| FALSE:              | Indicates chemical emissions below TEV                             |
| g:                  | gram   |
| g/g:                | grams of pollutant per gram of JP-8 fuel                           |
| g/yr:               | grams per year   |
| g/sec:              | grams per second   |
| m <sup>3</sup> :    | cubic meter  |
| NA:                 | not available  |
| OEL:                | occupational exposure limit  |
| sec:                | second   |
| TEV:                | threshold emissions value  |
| TRUE:               | Indicates chemical emissions above TEV                             |
| yr:                 | year   |
| µg:                 | microgram  |
| µg/m <sup>3</sup> : | micrograms per cubic meter   |

### BUILDING NUMBERS:

|      |  |
|------|--|
| 605  | Steam Plant  |
| 858  | Microelectronics Development Laboratory (MDL)              |
| 870  | Neutron Generator Facility (NGF)                           |
| 878  | Advanced Manufacturing Processes Laboratory (AMPL)         |
| 893  | Compound Semiconductor Research Laboratory (CSRL)          |
| 897  | Integrated Materials Research Laboratory (IMRL)            |
| 905  | Explosive Components Facility (ECF)                        |
| 963  | Repetitive High Energy Pulsed Power Unit II (RHEPP II)     |
| 981  | Short-Pulse High Intensity Nanosecond X-Radiator (SPHINX)  |
| 986  | Repetitive High Energy Pulsed Power Unit I (RHEPP I)       |
| 6580 | Hot Cell Facility (HCF)                                    |
| 6920 | Radioactive and Mixed Waste Management Facility (RMWMF)    |
| MESA | Microsystems and Engineering Sciences Applications Complex |

Tables D.1–4 through D.1–19 present the results of the noncarcinogenic chemical screening process, comparing the hypothetical emission rate to the TEV. The tables present 1996 purchases, and No Action, Expanded Operations, and Reduced Operations Alternatives results for HAPs, TAPs, VOCs, and additional chemicals from the CheMaster and HCPI databases, respectively. The Expanded Operations Alternative included results from the Microsystems and Engineering Sciences Applications (MESA) Complex configuration, if implemented. The word TRUE in the results column indicates that the hypothetical emission rate exceeds the TEV.

The final screening involves estimating actual emissions from process engineering data for those noncarcinogenic chemicals whose emission rates, based upon purchased quantities, exceeded the TEV. The estimated actual emission rate is again compared with the TEV to determine whether it is a chemical of concern.

Tables D.1–20, D.1–21, and D.1–22 present the No Action, Expanded Operations (with or without MESA Complex configuration), and Reduced Operations Alternatives results of the final screening step for the noncarcinogenic chemicals, comparing emission rates derived from process engineering estimates to the TEV. The process engineering estimates are emission factors based upon facility process knowledge applicable to each of the chemical emissions.

**Table D.1–4. 1996 Annual Purchases of Hazardous Air Pollutants (HAPs)  
Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 67-56-1    | Methanol                         | 1.89x10 <sup>3</sup> | 2.63x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 6580            | 7647-01-0  | Hydrogen chloride                | 1.09x10 <sup>3</sup> | 1.52x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 67-56-1    | Methanol                         | 8.38x10 <sup>4</sup> | 1.16x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 858             | 78-93-3    | Methyl ethyl ketone (2-butanone) | 8.05x10 <sup>2</sup> | 1.12x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 110-54-3   | n-Hexane                         | 1.40x10 <sup>3</sup> | 1.94x10 <sup>-4</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 858             | 7647-01-0  | Hydrogen chloride                | 6.58x10 <sup>4</sup> | 9.13x10 <sup>-3</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 7664-39-3  | Hydrogen fluoride                | 5.67x10 <sup>4</sup> | 7.87x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 67-56-1    | Alcohol, Methyl                  | 4.98x10 <sup>5</sup> | 6.92x10 <sup>-2</sup> | 2,600                     | 3.07                  | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)   | 5.58x10 <sup>4</sup> | 7.75x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 9.56x10 <sup>-3</sup> | FALSE  |
| 870             | 7440-47-3  | Chromium                         | 5.03x10 <sup>3</sup> | 6.99x10 <sup>-4</sup> | 5                         | 5.90x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                | 3.18x10 <sup>3</sup> | 4.41x10 <sup>-4</sup> | 0.01                      | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                   | 3.63x10 <sup>3</sup> | 5.04x10 <sup>-4</sup> | 0.2                       | 2.36x10 <sup>-4</sup> | TRUE   |
| 870             | 111-42-2   | Diethanolamine (85%)             | 1.02x10 <sup>5</sup> | 1.41x10 <sup>-2</sup> | 20                        | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 107-21-1   | Ethylene Glycol                  | 2.23x10 <sup>4</sup> | 3.10x10 <sup>-3</sup> | 260                       | 3.07x10 <sup>-1</sup> | FALSE  |
| 870             | 7647-01-0  | Hydrochloric Acid                | 3.90x10 <sup>4</sup> | 5.42x10 <sup>-3</sup> | 70                        | 8.26x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-39-3  | Hydrofluoric Acid                | 3.27x10 <sup>4</sup> | 4.54x10 <sup>-3</sup> | 20                        | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7439-96-5  | Manganese                        | 4.13x10 <sup>3</sup> | 5.73x10 <sup>-4</sup> | 2                         | 2.36x10 <sup>-3</sup> | FALSE  |
| 870             | 108-10-1   | Methyl iso-butyl ketone          | 2.04x10 <sup>4</sup> | 2.83x10 <sup>-3</sup> | 820                       | 9.68x10 <sup>-1</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                  | 2.66x10 <sup>5</sup> | 3.70x10 <sup>-2</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 870             | 7786-81-4  | Nickel Sulfate                   | 2.66x10 <sup>5</sup> | 3.70x10 <sup>-2</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 878             | 67-56-1    | Methanol                         | 5.84x10 <sup>4</sup> | 8.12x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 68-12-2    | N,N-dimethylformamide            | 3.27x10 <sup>1</sup> | 4.54x10 <sup>-6</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |

**Table D.1–4. 1996 Annual Purchases of Hazardous Air Pollutants (HAPs)**  
**Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr        | EMISSION RATE g/sec    | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|-----------------------|------------------------|---------------------------|-----------------------|--------|
| 878             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 7.78x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup>  | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 878             | 78-93-3    | Methyl ethyl ketone (2-butanone)          | 3.40x10 <sup>3</sup>  | 4.72x10 <sup>-4</sup>  | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 79-10-7    | Acrylic acid                              | 2.06x10 <sup>2</sup>  | 2.86x10 <sup>-5</sup>  | 5.90x10 <sup>1</sup>      | 6.97x10 <sup>-2</sup> | FALSE  |
| 878             | 80-62-6    | Methyl methacrylate                       | 1.12x10 <sup>2</sup>  | 1.56x10 <sup>-5</sup>  | 2.10x10 <sup>3</sup>      | 2.48                  | FALSE  |
| 878             | 84-74-2    | Dibutyl phthalate                         | 3.00                  | 4.17x10 <sup>-7</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 101-68-8   | Methylenebis(phenylisocyanate) (MDI)      | 9.92x10 <sup>1</sup>  | 1.38x10 <sup>-5</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 107-21-1   | Ethylene glycol                           | 3.29x10 <sup>3</sup>  | 4.58x10 <sup>-4</sup>  | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 878             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 4.68                  | 6.50x10 <sup>-7</sup>  | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 878             | 108-88-3   | Toluene                                   | 9.70x10 <sup>3</sup>  | 1.35x10 <sup>-3</sup>  | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 878             | 108-95-2   | Phenol                                    | 6.06x10 <sup>3</sup>  | 8.42x10 <sup>-4</sup>  | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 878             | 110-54-3   | n-Hexane                                  | 9.92x10 <sup>1</sup>  | 1.38x10 <sup>-5</sup>  | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 878             | 111-42-2   | Diethanolamine                            | 6.49x10 <sup>3</sup>  | 9.01x10 <sup>-4</sup>  | 2.00                      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 123-31-9   | Hydroquinone                              | 5.64x10 <sup>-3</sup> | 7.83x10 <sup>-10</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 131-11-3   | Dimethyl phthalate                        | 6.00                  | 8.33x10 <sup>-7</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate                  | 2.89x10 <sup>3</sup>  | 4.01x10 <sup>-4</sup>  | 3.60x10 <sup>-1</sup>     | 4.25x10 <sup>-4</sup> | FALSE  |
| 878             | 1330-20-7  | Xylene                                    | 4.47x10 <sup>3</sup>  | 6.21x10 <sup>-4</sup>  | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 878             | 7439-92-1  | Lead                                      | 5.32x10 <sup>3</sup>  | 7.38x10 <sup>-4</sup>  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7439-96-5  | Manganese                                 | 1.06x10 <sup>4</sup>  | 1.47x10 <sup>-3</sup>  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7439-97-6  | Mercury                                   | 2.72x10 <sup>4</sup>  | 3.78x10 <sup>-3</sup>  | 2.50x10 <sup>1</sup>      | 2.95x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-36-0  | Antimony                                  | 7.09x10 <sup>2</sup>  | 9.84x10 <sup>-5</sup>  | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-47-3  | Chromium (II) compounds, as chromium      | 1.88x10 <sup>4</sup>  | 2.61x10 <sup>-3</sup>  | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |

**Table D.1–4. 1996 Annual Purchases of Hazardous Air Pollutants (HAPs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                     | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7440-48-4  | Cobalt                                       | 2.02x10 <sup>4</sup> | 2.80x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-4</sup> | TRUE   |
| 878             | 7647-01-0  | Hydrogen chloride                            | 3.62x10 <sup>3</sup> | 5.02x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 878             | 7664-39-3  | Hydrogen fluoride                            | 8.43x10 <sup>3</sup> | 1.17x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 7782-49-2  | Selenium hexafluoride as selenium            | 4.54x10 <sup>1</sup> | 6.30x10 <sup>-6</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7784-42-1  | Arsine                                       | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7803-51-2  | Phosphine                                    | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 67-56-1    | Methanol                                     | 1.14x10 <sup>5</sup> | 1.58x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 893             | 107-21-1   | Ethylene glycol                              | 4.90x10 <sup>4</sup> | 6.81x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 893             | 108-88-3   | Toluene                                      | 9.80x10 <sup>3</sup> | 1.36x10 <sup>-3</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 893             | 7647-01-0  | Hydrogen chloride                            | 2.49x10 <sup>4</sup> | 3.46x10 <sup>-3</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-39-3  | Hydrogen fluoride                            | 3.29x10 <sup>4</sup> | 4.57x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 62-53-3    | Aniline                                      | 2.55x10 <sup>2</sup> | 3.55x10 <sup>-5</sup> | 7.60x10 <sup>1</sup>      | 8.97x10 <sup>-2</sup> | FALSE  |
| 897             | 67-56-1    | Methanol                                     | 3.16x10 <sup>4</sup> | 4.39x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 897             | 71-55-6    | 1,1,1-Trichloroethane<br>(methyl chloroform) | 1.20x10 <sup>4</sup> | 1.67x10 <sup>-3</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 897             | 74-88-4    | Methyl iodide                                | 5.00x10 <sup>2</sup> | 6.94x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 75-05-8    | Acetonitrile                                 | 6.60x10 <sup>3</sup> | 9.17x10 <sup>-4</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 897             | 106-42-3   | p-Xylene                                     | 6.86x10 <sup>3</sup> | 9.53x10 <sup>-4</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 897             | 107-21-1   | Ethylene glycol                              | 4.40x10 <sup>3</sup> | 6.11x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 897             | 108-10-1   | Methyl isobutyl ketone (hexone)              | 1.14x10 <sup>1</sup> | 1.58x10 <sup>-6</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 897             | 108-88-3   | Toluene                                      | 3.28x10 <sup>3</sup> | 4.55x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 897             | 108-95-2   | Phenol                                       | 1.00x10 <sup>2</sup> | 1.39x10 <sup>-5</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 897             | 110-54-3   | n-Hexane                                     | 1.41x10 <sup>4</sup> | 1.96x10 <sup>-3</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |

**Table D.1–4. 1996 Annual Purchases of Hazardous Air Pollutants (HAPs)  
Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 123-31-9   | Hydroquinone      | 6.84x10 <sup>2</sup> | 9.50x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7439-92-1  | Lead              | 5.00                 | 6.94x10 <sup>-7</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 897             | 7647-01-0  | Hydrogen chloride | 3.19x10 <sup>3</sup> | 4.44x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-39-3  | Hydrogen fluoride | 1.64x10 <sup>3</sup> | 2.27x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 905             | 67-56-1    | Methanol          | 5.12x10 <sup>3</sup> | 7.11x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 905             | 75-05-8    | Acetonitrile      | 1.26x10 <sup>4</sup> | 1.75x10 <sup>-3</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 905             | 108-88-3   | Toluene           | 6.92x10 <sup>2</sup> | 9.61x10 <sup>-5</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 981             | 67-56-1    | Methanol          | 6.06x10 <sup>3</sup> | 8.41x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |

**Table D.1–5. Projected Hazardous Air Pollutant (HAP) Emissions  
No Action Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 67-56-1    | Methanol                         | 1.89x10 <sup>3</sup> | 2.63x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 6580            | 7647-01-0  | Hydrogen chloride                | 2.19x10 <sup>3</sup> | 3.04x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 67-56-1    | Methanol                         | 1.47x10 <sup>5</sup> | 2.04x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 858             | 78-93-3    | Methyl ethyl ketone (2-butanone) | 1.41x10 <sup>3</sup> | 1.96x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 110-54-3   | n-Hexane                         | 2.45x10 <sup>3</sup> | 3.40x10 <sup>-4</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 858             | 7647-01-0  | Hydrogen chloride                | 1.15x10 <sup>5</sup> | 1.6x10 <sup>-2</sup>  | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 7664-39-3  | Hydrogen fluoride                | 9.92x10 <sup>4</sup> | 1.38x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)   | 1.68x10 <sup>5</sup> | 2.33x10 <sup>-2</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | TRUE   |
| 870             | 67-56-1    | Alcohol, Methyl                  | 1.66x10 <sup>6</sup> | 2.31x10 <sup>-1</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 870             | 7440-47-3  | Chromium                         | 1.51x10 <sup>4</sup> | 2.10x10 <sup>-3</sup> | 5                         | 5.90x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                | 8.98x10 <sup>3</sup> | 1.25x10 <sup>-3</sup> | 1.00x10 <sup>-2</sup>     | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                   | 1.04x10 <sup>4</sup> | 1.45x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |
| 870             | 111-42-2   | Diethanolamine (85%)             | 3.05x10 <sup>5</sup> | 4.24x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 870             | 107-21-1   | Ethylene Glycol                  | 2.23x10 <sup>4</sup> | 3.10x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 870             | 7647-01-0  | Hydrochloric Acid                | 1.19x10 <sup>5</sup> | 1.65x10 <sup>-2</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-39-3  | Hydrofluoric Acid                | 9.86x10 <sup>4</sup> | 1.37x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7439-96-5  | Manganese                        | 1.31x10 <sup>4</sup> | 1.82x10 <sup>-3</sup> | 2                         | 2.36x10 <sup>-3</sup> | FALSE  |
| 870             | 108-10-1   | Methyl iso-butyl ketone          | 6.84x10 <sup>4</sup> | 9.50x10 <sup>-3</sup> | 8.2x10 <sup>2</sup>       | 9.68x10 <sup>-1</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                  | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 870             | 7786-81-4  | Nickel Sulfate                   | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 878             | 67-56-1    | Methanol                         | 8.77x10 <sup>4</sup> | 1.22x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 68-12-2    | N,N-Dimethylformamide            | 4.90x10 <sup>1</sup> | 6.81x10 <sup>-6</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>1</sup>  | FALSE  |

**Table D.1–5. Projected Hazardous Air Pollutant (HAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 1.17x10 <sup>5</sup> | 1.62x10 <sup>-2</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 878             | 78-93-3    | Methyl ethyl ketone (2-butanone)          | 5.10x10 <sup>3</sup> | 7.08x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 79-10-7    | Acrylic acid                              | 3.09x10 <sup>2</sup> | 4.30x10 <sup>-5</sup> | 5.90x10 <sup>1</sup>      | 6.97x10 <sup>-2</sup> | FALSE  |
| 878             | 80-62-6    | Methyl methacrylate                       | 1.68x10 <sup>2</sup> | 2.34x10 <sup>-5</sup> | 2.10x10 <sup>3</sup>      | 2.48                  | FALSE  |
| 878             | 84-74-2    | Dibutyl phthalate                         | 4.50                 | 6.25x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 101-68-8   | Methylenebis (phenylisocyanate) (MDI)     | 1.49x10 <sup>2</sup> | 2.07x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 107-21-1   | Ethylene glycol                           | 4.94x10 <sup>3</sup> | 6.86x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 878             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 7.02                 | 9.75x10 <sup>-7</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 878             | 108-88-3   | Toluene                                   | 1.45x10 <sup>4</sup> | 2.02x10 <sup>-3</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 878             | 108-95-2   | Phenol                                    | 9.10x10 <sup>3</sup> | 1.26x10 <sup>-3</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 878             | 110-54-3   | n-Hexane                                  | 1.49x10 <sup>2</sup> | 2.07x10 <sup>-5</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 878             | 111-42-2   | Diethanolamine                            | 9.73x10 <sup>3</sup> | 1.35x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 123-31-9   | Hydroquinone                              | 8.46x10 <sup>3</sup> | 1.17x10 <sup>-9</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 131-11-3   | Dimethyl phthalate                        | 9.00                 | 1.25x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate                  | 4.33x10 <sup>3</sup> | 6.00x10 <sup>-4</sup> | 3.60x10 <sup>1</sup>      | 4.25x10 <sup>-4</sup> | TRUE   |
| 878             | 1330-20-7  | Xylene                                    | 6.70x10 <sup>3</sup> | 9.31x10 <sup>-4</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 878             | 7439-92-1  | Lead                                      | 7.97x10 <sup>3</sup> | 1.11x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7439-96-5  | Manganese                                 | 1.59x10 <sup>4</sup> | 2.20x10 <sup>-3</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7439-97-6  | Mercury                                   | 4.08x10 <sup>4</sup> | 5.67x10 <sup>-3</sup> | 2.50x10 <sup>1</sup>      | 2.95x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-36-0  | Antimony                                  | 1.06x10 <sup>3</sup> | 1.48x10 <sup>-4</sup> | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-47-3  | Chromium (II) compounds, as chromium      | 2.82x10 <sup>4</sup> | 3.91x10 <sup>-3</sup> | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-48-4  | Cobalt                                    | 3.03x10 <sup>4</sup> | 4.21x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |

**Table D.1–5. Projected Hazardous Air Pollutant (HAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7647-01-0  | Hydrogen chloride                         | 5.43x10 <sup>3</sup> | 7.54x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 878             | 7664-39-3  | Hydrogen fluoride                         | 1.26x10 <sup>4</sup> | 1.76x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 7782-49-2  | Selenium hexafluoride as selenium         | 6.80x10 <sup>1</sup> | 9.45x10 <sup>-6</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7784-42-1  | Arsine                                    | 5.49x10 <sup>3</sup> | 7.62x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7803-51-2  | Phosphine                                 | 5.49x10 <sup>3</sup> | 7.62x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 67-56-1    | Methanol                                  | 1.14x10 <sup>5</sup> | 1.58x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 893             | 107-21-1   | Ethylene glycol                           | 4.90x10 <sup>4</sup> | 6.81x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 893             | 108-88-3   | Toluene                                   | 9.80x10 <sup>3</sup> | 1.36x10 <sup>-3</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 893             | 7647-01-0  | Hydrogen chloride                         | 2.49x10 <sup>4</sup> | 3.46x10 <sup>-3</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-39-3  | Hydrogen fluoride                         | 3.29x10 <sup>4</sup> | 4.57x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 62-53-3    | Aniline                                   | 2.55x10 <sup>2</sup> | 3.55x10 <sup>-5</sup> | 7.60x10 <sup>1</sup>      | 8.97x10 <sup>-2</sup> | FALSE  |
| 897             | 67-56-1    | Methanol                                  | 3.16x10 <sup>4</sup> | 4.39x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 897             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 1.20x10 <sup>4</sup> | 1.67x10 <sup>-3</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 897             | 74-88-4    | Methyl iodide                             | 5.00x10 <sup>2</sup> | 6.94x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 75-05-8    | Acetonitrile                              | 6.60x10 <sup>3</sup> | 9.17x10 <sup>-4</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 897             | 106-42-3   | p-Xylene                                  | 6.86x10 <sup>3</sup> | 9.53x10 <sup>-4</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 897             | 107-21-1   | Ethylene glycol                           | 4.40x10 <sup>3</sup> | 6.11x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 897             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 1.14x10 <sup>1</sup> | 1.58x10 <sup>-6</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 897             | 108-88-3   | Toluene                                   | 3.28x10 <sup>3</sup> | 4.55x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 897             | 108-95-2   | Phenol                                    | 1.00x10 <sup>2</sup> | 1.39x10 <sup>-5</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 897             | 110-54-3   | n-Hexane                                  | 1.41x10 <sup>4</sup> | 1.96x10 <sup>-3</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 897             | 123-31-9   | Hydroquinone                              | 6.84x10 <sup>2</sup> | 9.50x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |

**Table D.1–5. Projected Hazardous Air Pollutant (HAP) Emissions  
No Action Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 7439-92-1  | Lead              | 5.00                 | 6.94x10 <sup>-7</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 897             | 7647-01-0  | Hydrogen chloride | 3.19x10 <sup>3</sup> | 4.44x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-39-3  | Hydrogen fluoride | 1.64x10 <sup>3</sup> | 2.27x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 905             | 67-56-1    | Methanol          | 1.02x10 <sup>4</sup> | 1.42x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 905             | 75-05-8    | Acetonitrile      | 2.52x10 <sup>4</sup> | 3.49x10 <sup>-3</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 905             | 108-88-3   | Toluene           | 1.38x10 <sup>3</sup> | 1.92x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 981             | 67-56-1    | Methanol          | 1.82x10 <sup>4</sup> | 2.52x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |

**Table D.1–6. Projected Hazardous Air Pollutant (HAP) Emissions  
Expanded Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 67-56-1    | Methanol                         | 1.89x10 <sup>3</sup> | 2.63x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 6580            | 7647-01-0  | Hydrogen chloride                | 6.57x10 <sup>3</sup> | 9.12x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 67-56-1    | Methanol                         | 1.57x10 <sup>5</sup> | 2.18x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 858             | 78-93-3    | Methyl ethyl ketone (2-butanone) | 1.51x10 <sup>3</sup> | 2.10x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 110-54-3   | n-Hexane                         | 2.62x10 <sup>3</sup> | 3.65x10 <sup>-4</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 858             | 7647-01-0  | Hydrogen chloride                | 1.23x10 <sup>5</sup> | 1.71x10 <sup>-2</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 7664-39-3  | Hydrogen fluoride                | 1.06x10 <sup>5</sup> | 1.48x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)   | 1.68x10 <sup>5</sup> | 2.33x10 <sup>-2</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | TRUE   |
| 870             | 67-56-1    | Alcohol, Methyl                  | 1.66x10 <sup>6</sup> | 2.31x10 <sup>-1</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 870             | 7440-47-3  | Chromium                         | 1.51x10 <sup>4</sup> | 2.10x10 <sup>-3</sup> | 5                         | 5.90x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                | 8.98x10 <sup>3</sup> | 1.25x10 <sup>-3</sup> | 1.00x10 <sup>-2</sup>     | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                   | 1.04x10 <sup>4</sup> | 1.45x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |
| 870             | 111-42-2   | Diethanolamine (85%)             | 3.05x10 <sup>5</sup> | 4.24x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 870             | 107-21-1   | Ethylene Glycol                  | 2.23x10 <sup>4</sup> | 3.10x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 870             | 7647-01-0  | Hydrochloric Acid                | 1.19x10 <sup>5</sup> | 1.65x10 <sup>-2</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-39-3  | Hydrofluoric Acid                | 9.86x10 <sup>4</sup> | 1.37x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7439-96-5  | Manganese                        | 1.31x10 <sup>4</sup> | 1.82x10 <sup>-3</sup> | 2                         | 2.36x10 <sup>-3</sup> | FALSE  |
| 870             | 108-10-1   | Methyl iso-butyl ketone          | 6.84x10 <sup>4</sup> | 9.50x10 <sup>-3</sup> | 8.2x10 <sup>2</sup>       | 9.68x10 <sup>-1</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                  | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 870             | 7786-81-4  | Nickel Sulfate                   | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 878             | 67-56-1    | Methanol                         | 1.17x10 <sup>5</sup> | 1.62x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 68-12-2    | N,N-Dimethylformamide            | 6.54x10 <sup>1</sup> | 9.08x10 <sup>-6</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |

**Table D.1–6. Projected Hazardous Air Pollutant (HAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 1.56x10 <sup>5</sup> | 2.16x10 <sup>-2</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 878             | 78-93-3    | Methyl ethyl ketone (2-butanone)          | 6.80x10 <sup>3</sup> | 9.44x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 79-10-7    | Acrylic acid                              | 4.12x10 <sup>2</sup> | 5.73x10 <sup>-5</sup> | 5.90x10 <sup>1</sup>      | 6.97x10 <sup>-2</sup> | FALSE  |
| 878             | 80-62-6    | Methyl methacrylate                       | 2.24x10 <sup>2</sup> | 3.12x10 <sup>-5</sup> | 2.10x10 <sup>3</sup>      | 2.48                  | FALSE  |
| 878             | 84-74-2    | Dibutyl phthalate                         | 6.00                 | 8.33x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 101-68-8   | Methylenebis(phenylisocyanate) (MDI)      | 1.98x10 <sup>2</sup> | 2.76x10 <sup>-5</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 107-21-1   | Ethylene glycol                           | 6.59x10 <sup>3</sup> | 9.15x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 878             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 9.36                 | 1.30x10 <sup>-6</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 878             | 108-88-3   | Toluene                                   | 1.94x10 <sup>4</sup> | 2.69x10 <sup>-3</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 878             | 108-95-2   | Phenol                                    | 1.21x10 <sup>4</sup> | 1.68x10 <sup>-3</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 878             | 110-54-3   | n-Hexane                                  | 1.98x10 <sup>2</sup> | 2.76x10 <sup>-5</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 878             | 111-42-2   | Diethanolamine                            | 1.30x10 <sup>4</sup> | 1.80x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 123-31-9   | Hydroquinone                              | 1.13x10 <sup>2</sup> | 1.57x10 <sup>-9</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 131-11-3   | Dimethyl phthalate                        | 1.20x10 <sup>1</sup> | 1.67x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate                  | 5.77x10 <sup>3</sup> | 4.01x10 <sup>-4</sup> | 3.60x10 <sup>-1</sup>     | 4.25x10 <sup>-4</sup> | TRUE   |
| 878             | 1330-20-7  | Xylene                                    | 8.94x10 <sup>3</sup> | 1.24x10 <sup>-3</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 878             | 7439-92-1  | Lead                                      | 1.06x10 <sup>4</sup> | 1.48x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7439-96-5  | Manganese                                 | 2.12x10 <sup>4</sup> | 2.94x10 <sup>-3</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | TRUE   |
| 878             | 7439-97-6  | Mercury                                   | 5.44x10 <sup>4</sup> | 7.56x10 <sup>-3</sup> | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-36-0  | Antimony                                  | 1.42x10 <sup>3</sup> | 1.97x10 <sup>-4</sup> | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-47-3  | Chromium (II) compounds, as chromium      | 3.76x10 <sup>4</sup> | 5.22x10 <sup>-3</sup> | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-48-4  | Cobalt                                    | 4.04x10 <sup>4</sup> | 5.61x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |

**Table D.1–6. Projected Hazardous Air Pollutant (HAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr       | EMISSION RATE g/sec    | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-----------------------------------|----------------------|------------------------|---------------------------|-----------------------|--------|
| 878             | 7647-01-0  | Hydrogen chloride                 | 7.23x10 <sup>3</sup> | 1.00x10 <sup>-3</sup>  | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 878             | 7664-39-3  | Hydrogen fluoride                 | 1.69x10 <sup>4</sup> | 2.34x10 <sup>-3</sup>  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 7782-49-2  | Selenium hexafluoride as selenium | 9.07x10 <sup>1</sup> | 1.26x10 <sup>-5</sup>  | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7784-42-1  | Arsine                            | 7.32x10 <sup>3</sup> | 1.02x10 <sup>-3</sup>  | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7803-51-2  | Phosphine                         | 7.32x10 <sup>3</sup> | 1.02x10 <sup>-3</sup>  | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 67-56-1    | Methanol <sup>a</sup>             | 2.28x10 <sup>5</sup> | 3.17x10 <sup>-2</sup>  | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 893             | 107-21-1   | Ethylene glycol <sup>a</sup>      | 9.80x10 <sup>4</sup> | 1.36x10 <sup>-2</sup>  | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 893             | 108-88-3   | Toluene <sup>a</sup>              | 1.96x10 <sup>4</sup> | 2.72x10 <sup>-3</sup>  | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 893             | 7647-01-0  | Hydrogen chloride <sup>a</sup>    | 4.98x10 <sup>4</sup> | 6.91x10 <sup>-3</sup>  | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-39-3  | Hydrogen fluoride <sup>a</sup>    | 6.58x10 <sup>4</sup> | 9.14x10 <sup>-3</sup>  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| MESA            | 84-74-2    | Dibutyl_phthalate <sup>b</sup>    | 9.48x10 <sup>3</sup> | 1.32x10 <sup>-3</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| MESA            | 107-06-2   | Ethylene dichloride <sup>b</sup>  | 6.27x10 <sup>2</sup> | 8.71 x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| MESA            | 107-21-1   | Ethylene glycol <sup>b</sup>      | 6.03x10 <sup>4</sup> | 8.37x10 <sup>-3</sup>  | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| MESA            | 7647-01-0  | Hydrogen chloride <sup>b</sup>    | 3.75x10 <sup>4</sup> | 5.21x10 <sup>-3</sup>  | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| MESA            | 7664-39-4  | Hydrogen fluoride <sup>b</sup>    | 8.48x10 <sup>3</sup> | 1.18x10 <sup>-3</sup>  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| MESA            | 67-56-1    | Methanol <sup>b</sup>             | 2.72x10 <sup>5</sup> | 3.78x10 <sup>-2</sup>  | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| MESA            | 110-54-3   | N-Hexane <sup>b</sup>             | 1.45x10 <sup>3</sup> | 2.02x10 <sup>-4</sup>  | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| MESA            | 7803-51-2  | Phosphine <sup>b</sup>            | 5.12x10 <sup>4</sup> | 7.11x10 <sup>-3</sup>  | 1.40                      | 1.65x10 <sup>-3</sup> | TRUE   |
| MESA            | 108-88-3   | Toluene <sup>b</sup>              | 6.96x10 <sup>3</sup> | 9.67x10 <sup>-4</sup>  | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| MESA            | 1330-20-7  | Xylene <sup>b</sup>               | 2.00x10 <sup>2</sup> | 2.78x10 <sup>-5</sup>  | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 897             | 62-53-3    | Aniline                           | 2.55x10 <sup>2</sup> | 3.55x10 <sup>-5</sup>  | 7.60x10 <sup>1</sup>      | 8.97x10 <sup>-2</sup> | FALSE  |
| 897             | 67-56-1    | Methanol                          | 3.16x10 <sup>4</sup> | 4.39x10 <sup>-3</sup>  | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |

**Table D.1–6. Projected Hazardous Air Pollutant (HAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 1.20x10 <sup>4</sup> | 1.67x10 <sup>-3</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 897             | 74-88-4    | Methyl iodide                             | 5.00x10 <sup>2</sup> | 6.94x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 75-05-8    | Acetonitrile                              | 6.60x10 <sup>3</sup> | 9.17x10 <sup>-4</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 897             | 106-42-3   | p-Xylene                                  | 6.86x10 <sup>3</sup> | 9.53x10 <sup>-4</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 897             | 107-21-1   | Ethylene glycol                           | 4.40x10 <sup>3</sup> | 6.11x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 897             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 1.14x10 <sup>1</sup> | 1.58x10 <sup>-6</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 897             | 108-88-3   | Toluene                                   | 3.28x10 <sup>3</sup> | 4.55x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 897             | 108-95-2   | Phenol                                    | 1.00x10 <sup>2</sup> | 1.39x10 <sup>-5</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 897             | 110-54-3   | n-Hexane                                  | 1.41x10 <sup>4</sup> | 1.96x10 <sup>-3</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 897             | 123-31-9   | Hydroquinone                              | 6.84x10 <sup>2</sup> | 9.50x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7439-92-1  | Lead                                      | 5.00                 | 6.94x10 <sup>-7</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 897             | 7647-01-0  | Hydrogen chloride                         | 3.19x10 <sup>3</sup> | 4.44x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-39-3  | Hydrogen fluoride                         | 1.64x10 <sup>3</sup> | 2.27x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 905             | 67-56-1    | Methanol                                  | 1.02x10 <sup>4</sup> | 1.42x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 905             | 75-05-8    | Acetonitrile                              | 2.52x10 <sup>4</sup> | 3.49x10 <sup>-3</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 905             | 108-88-3   | Toluene                                   | 1.38x10 <sup>3</sup> | 1.92x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 981             | 67-56-1    | Methanol                                  | 4.66x10 <sup>4</sup> | 6.48x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA Complex is built, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute emissions under the Expanded Operations Alternative.

<sup>b</sup> If Building 893 is not replaced by the MESA Complex, the chemicals listed would not contribute to chemical emissions under the Expanded Operations Alternative.

**Table D.1–7. Projected Hazardous Air Pollutant (HAP) Emissions  
Reduced Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 67-56-1    | Methanol                         | 1.89x10 <sup>3</sup> | 2.63x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 6580            | 7647-01-0  | Hydrogen chloride                | 1.09x10 <sup>3</sup> | 1.52x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 67-56-1    | Methanol                         | 5.62x10 <sup>4</sup> | 7.80x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 858             | 78-93-3    | Methyl ethyl ketone (2-butanone) | 5.39x10 <sup>2</sup> | 7.49x10 <sup>-5</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 110-54-3   | n-Hexane                         | 9.38x10 <sup>2</sup> | 1.30x10 <sup>-4</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 858             | 7647-01-0  | Hydrogen chloride                | 4.41x10 <sup>4</sup> | 6.12x10 <sup>-3</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 858             | 7664-39-3  | Hydrogen fluoride                | 3.80x10 <sup>4</sup> | 5.27x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)   | 1.68x10 <sup>5</sup> | 2.33x10 <sup>-2</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | TRUE   |
| 870             | 67-56-1    | Alcohol, Methyl                  | 1.66x10 <sup>6</sup> | 2.31x10 <sup>-1</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 870             | 7440-47-3  | Chromium                         | 1.51x10 <sup>4</sup> | 2.10x10 <sup>-3</sup> | 5                         | 5.90x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                | 8.98x10 <sup>3</sup> | 1.25x10 <sup>-3</sup> | 1.00x10 <sup>-2</sup>     | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                   | 1.04x10 <sup>4</sup> | 1.45x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |
| 870             | 111-42-2   | Diethanolamine (85%)             | 3.05x10 <sup>5</sup> | 4.24x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 870             | 107-21-1   | Ethylene Glycol                  | 2.23x10 <sup>4</sup> | 3.10x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 870             | 7647-01-0  | Hydrochloric Acid                | 1.19x10 <sup>5</sup> | 1.65x10 <sup>-2</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-39-3  | Hydrofluoric Acid                | 9.86x10 <sup>4</sup> | 1.37x10 <sup>-2</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7439-96-5  | Manganese                        | 1.31x10 <sup>4</sup> | 1.82x10 <sup>-3</sup> | 2                         | 2.36x10 <sup>-3</sup> | FALSE  |
| 870             | 108-10-1   | Methyl iso-butyl ketone          | 6.84x10 <sup>4</sup> | 9.50x10 <sup>-3</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                  | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | TRUE   |
| 870             | 7786-81-4  | Nickel Sulfate                   | 7.98x10 <sup>5</sup> | 1.11x10 <sup>-1</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | FALSE  |
| 878             | 67-56-1    | Methanol                         | 5.84x10 <sup>4</sup> | 8.12x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 68-12-2    | N,N-Dimethylformamide            | 3.27x10 <sup>1</sup> | 4.54x10 <sup>-6</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |

**Table D.1–7. Projected Hazardous Air Pollutant (HAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr        | EMISSION RATE g/sec    | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|-----------------------|------------------------|---------------------------|-----------------------|--------|
| 878             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 7.78x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup>  | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 878             | 78-93-3    | Methyl ethyl ketone (2-butanone)          | 3.40x10 <sup>3</sup>  | 4.72x10 <sup>-4</sup>  | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 79-10-7    | Acrylic acid                              | 2.06x10 <sup>2</sup>  | 2.86x10 <sup>-5</sup>  | 5.90x10 <sup>1</sup>      | 6.97x10 <sup>-2</sup> | FALSE  |
| 878             | 80-62-6    | Methyl methacrylate                       | 1.12x10 <sup>2</sup>  | 1.56x10 <sup>-5</sup>  | 2.10x10 <sup>3</sup>      | 2.48                  | FALSE  |
| 878             | 84-74-2    | Dibutyl phthalate                         | 3.00                  | 4.17x10 <sup>-7</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 101-68-8   | Methylenebis(phenylisocyanate) (MDI)      | 9.92x10 <sup>1</sup>  | 1.38x10 <sup>-5</sup>  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 107-21-1   | Ethylene glycol                           | 3.29x10 <sup>3</sup>  | 4.58x10 <sup>-4</sup>  | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 878             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 4.68                  | 6.50x10 <sup>-7</sup>  | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 878             | 108-88-3   | Toluene                                   | 9.70x10 <sup>3</sup>  | 1.35x10 <sup>-3</sup>  | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 878             | 108-95-2   | Phenol                                    | 6.06x10 <sup>3</sup>  | 8.42x10 <sup>-4</sup>  | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 878             | 110-54-3   | n-Hexane                                  | 9.92x10 <sup>1</sup>  | 1.38x10 <sup>-5</sup>  | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 878             | 111-42-2   | Diethanolamine                            | 6.49x10 <sup>3</sup>  | 9.01x10 <sup>-4</sup>  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 123-31-9   | Hydroquinone                              | 5.64x10 <sup>-3</sup> | 7.83x10 <sup>-10</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 131-11-3   | Dimethyl phthalate                        | 6.00                  | 8.33x10 <sup>-7</sup>  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate                  | 2.89x10 <sup>3</sup>  | 4.01x10 <sup>-4</sup>  | 3.60x10 <sup>-1</sup>     | 4.25x10 <sup>-4</sup> | FALSE  |
| 878             | 1330-20-7  | Xylene                                    | 4.47x10 <sup>3</sup>  | 6.21x10 <sup>-4</sup>  | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 878             | 7439-92-1  | Lead                                      | 5.32x10 <sup>3</sup>  | 7.38x10 <sup>-4</sup>  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7439-96-5  | Manganese                                 | 1.06x10 <sup>4</sup>  | 1.47x10 <sup>-3</sup>  | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7439-97-6  | Mercury                                   | 2.72x10 <sup>4</sup>  | 3.78x10 <sup>-3</sup>  | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-36-0  | Antimony                                  | 7.09x10 <sup>2</sup>  | 9.84x10 <sup>-5</sup>  | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-47-3  | Chromium (II) compounds, as chromium      | 1.88x10 <sup>4</sup>  | 2.61x10 <sup>-3</sup>  | 5.00                      | 5.90x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-48-4  | Cobalt                                    | 2.02x10 <sup>4</sup>  | 2.80x10 <sup>-3</sup>  | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | TRUE   |

**Table D.1–7. Projected Hazardous Air Pollutant (HAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7647-01-0  | Hydrogen chloride                         | 3.62x10 <sup>3</sup> | 5.02x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 878             | 7664-39-3  | Hydrogen fluoride                         | 8.43x10 <sup>3</sup> | 1.17x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 7782-49-2  | Selenium hexafluoride as selenium         | 4.54x10 <sup>1</sup> | 6.30x10 <sup>-6</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7784-42-1  | Arsine                                    | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 878             | 7803-51-2  | Phosphine                                 | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 67-56-1    | Methanol                                  | 1.14x10 <sup>5</sup> | 1.58x10 <sup>-2</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 893             | 107-21-1   | Ethylene glycol                           | 4.90x10 <sup>4</sup> | 6.81x10 <sup>-3</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 893             | 108-88-3   | Toluene                                   | 9.80x10 <sup>3</sup> | 1.36x10 <sup>-3</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 893             | 7647-01-0  | Hydrogen chloride                         | 2.49x10 <sup>4</sup> | 3.46x10 <sup>-3</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-39-3  | Hydrogen fluoride                         | 3.29x10 <sup>4</sup> | 4.57x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 62-53-3    | Aniline                                   | 2.35x10 <sup>2</sup> | 3.26x10 <sup>-5</sup> | 7.60x10 <sup>1</sup>      | 8.97x10 <sup>-2</sup> | FALSE  |
| 897             | 67-56-1    | Methanol                                  | 2.91x10 <sup>4</sup> | 4.04x10 <sup>-3</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 897             | 71-55-6    | 1,1,1-Trichloroethane (methyl chloroform) | 1.11x10 <sup>4</sup> | 1.54x10 <sup>-3</sup> | 1.08x10 <sup>4</sup>      | 1.28x10 <sup>1</sup>  | FALSE  |
| 897             | 74-88-4    | Methyl iodide                             | 4.60x10 <sup>2</sup> | 6.39x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 75-05-8    | Acetonitrile                              | 6.07x10 <sup>3</sup> | 8.44x10 <sup>-4</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 897             | 106-42-3   | p-Xylene                                  | 6.31x10 <sup>3</sup> | 8.76x10 <sup>-4</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 897             | 107-21-1   | Ethylene glycol                           | 4.05x10 <sup>3</sup> | 5.62x10 <sup>-4</sup> | 2.60x10 <sup>2</sup>      | 3.07x10 <sup>-1</sup> | FALSE  |
| 897             | 108-10-1   | Methyl isobutyl ketone (hexone)           | 1.05x10 <sup>1</sup> | 1.46x10 <sup>-6</sup> | 8.20x10 <sup>2</sup>      | 9.68x10 <sup>-1</sup> | FALSE  |
| 897             | 108-88-3   | Toluene                                   | 3.02x10 <sup>3</sup> | 4.19x10 <sup>-4</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 897             | 108-95-2   | Phenol                                    | 9.20x10 <sup>1</sup> | 1.28x10 <sup>-5</sup> | 1.90x10 <sup>2</sup>      | 2.24x10 <sup>-1</sup> | FALSE  |
| 897             | 110-54-3   | n-Hexane                                  | 1.30x10 <sup>4</sup> | 1.80x10 <sup>-3</sup> | 1.76x10 <sup>3</sup>      | 2.08                  | FALSE  |
| 897             | 123-31-9   | Hydroquinone                              | 6.29x10 <sup>2</sup> | 8.74x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |

**Table D.1–7. Projected Hazardous Air Pollutant (HAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 7439-92-1  | Lead              | 4.60                 | 6.39x10 <sup>-7</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 897             | 7647-01-0  | Hydrogen chloride | 2.94x10 <sup>3</sup> | 4.08x10 <sup>-4</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-39-3  | Hydrogen fluoride | 1.51x10 <sup>3</sup> | 2.09x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 905             | 67-56-1    | Methanol          | 1.02x10 <sup>3</sup> | 1.42x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 905             | 75-05-8    | Acetonitrile      | 2.52x10 <sup>3</sup> | 3.49x10 <sup>-4</sup> | 3.40x10 <sup>2</sup>      | 4.01x10 <sup>-1</sup> | FALSE  |
| 905             | 108-88-3   | Toluene           | 1.38x10 <sup>2</sup> | 1.92x10 <sup>-5</sup> | 1.88x10 <sup>3</sup>      | 2.22                  | FALSE  |
| 981             | 67-56-1    | Methanol          | 4.24x10 <sup>3</sup> | 5.89x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)**  
**Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 79-09-4    | Propionic acid                          | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |
| 605             | 7664-93-9  | Sulfuric acid                           | 8.25x10 <sup>1</sup> | 1.15x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6580            | 141-78-6   | Ethyl acetate                           | 3.60x10 <sup>3</sup> | 5.00x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 6580            | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 1.66x10 <sup>2</sup> | 2.31x10 <sup>-5</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 6580            | 7697-37-2  | Nitric acid                             | 2.62x10 <sup>3</sup> | 3.65x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6580            | 1310-73-2  | Sodium hydroxide                        | 1.13x10 <sup>4</sup> | 1.57x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6580            | 7664-93-9  | Sulfuric acid                           | 9.20x10 <sup>2</sup> | 1.28x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6920            | 7697-37-2  | Nitric acid                             | 1.87x10 <sup>2</sup> | 2.60x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6920            | 1310-73-2  | Sodium hydroxide                        | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6920            | 7440-66-6  | Zinc                                    | 1.00x10 <sup>3</sup> | 1.39x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 858             | 64-19-7    | Acetic acid                             | 3.22x10 <sup>4</sup> | 4.48x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 858             | 67-64-1    | Acetone                                 | 1.74x10 <sup>4</sup> | 2.41x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 1.77x10 <sup>6</sup> | 2.46x10 <sup>-1</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | TRUE   |
| 858             | 7697-37-2  | Nitric acid                             | 2.28x10 <sup>6</sup> | 3.16x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-38-2  | Phosphoric acid                         | 4.34x10 <sup>4</sup> | 6.02x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 858             | 7803-62-5  | Silane (silicon tetrahydride)           | 1.02x10 <sup>5</sup> | 1.41x10 <sup>-2</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-2</sup> | FALSE  |
| 858             | 1310-73-2  | Sodium hydroxide                        | 3.50x10 <sup>7</sup> | 4.86                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-93-9  | Sulfuric acid                           | 3.30x10 <sup>4</sup> | 4.59x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid                             | 3.45x10 <sup>4</sup> | 4.79x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid, Glacial                    | 3.86x10 <sup>4</sup> | 5.35x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 67-64-1    | Acetone                                 | 2.15x10 <sup>6</sup> | 2.99x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 870             | 71-36-3    | Alcohol, Butyl                          | 4.08x10 <sup>3</sup> | 5.67x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)**  
**Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 67-63-0    | Alcohol, Isopropyl                                      | 7.85x10 <sup>4</sup> | 1.09x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 870             | 7429-90-5  | Aluminum  | 2.00x10 <sup>5</sup> | 2.77x10 <sup>-2</sup> | 50                        | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 1344-28-1  | Aluminum Oxide  | 9.98x10 <sup>4</sup> | 1.39x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 1336-21-6  | Ammonium Hydroxide                                      | 4.54x10 <sup>3</sup> | 6.30x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             | 1113-50-1  | Boric Acid  | 3.99x10 <sup>4</sup> | 5.54x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             |            | Brulin Cleaner  | 0                    | 0                     | 0                         | 0                     | FALSE  |
| 870             | 11-15-9    | Cellosolve Acetate                                      | 1.81x10 <sup>3</sup> | 2.52x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Cerric Ammonium Nitrate                                 | 5.99x10 <sup>5</sup> | 8.32x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Citridet Cleaner  | 3.82x10 <sup>5</sup> | 5.31x10 <sup>-2</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 7440-50-8  | Copper  | 2.00x10 <sup>5</sup> | 2.77x10 <sup>-2</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 870             | 7440-50-8  | Copper (0.10%)  | 1.81x10 <sup>1</sup> | 2.52x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             |            | Carboxyl terminated acrylonitrile butadiene Epoxy Resin | 9.98x10 <sup>4</sup> | 1.39x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Curing Agent Z (37% methylene dianiline)                | 1.51x10 <sup>5</sup> | 2.09x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | 2,6-diethylaniline curing agent                         | 1.20x10 <sup>5</sup> | 1.66x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Diala oil   | 1.67x10 <sup>5</sup> | 2.32x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 106-42-3   | Di-p Xylene   | 2.73x10 <sup>5</sup> | 3.79x10 <sup>-2</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 870             | 7440-52-0  | Erbium  | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Fluorinert  | 1.87x10 <sup>6</sup> | 2.59x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Glass microballoons filler                              | 2.49x10 <sup>4</sup> | 3.46x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             |            | Hexylene glycol   | 3.33x10 <sup>5</sup> | 4.63x10 <sup>-2</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 1309-37-1  | Iron (53%)  | 1.04x10 <sup>4</sup> | 1.45x10 <sup>-3</sup> | 50                        | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)**  
**Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                               | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 123-92-2   | Iso Amyl Acetate                       | 2.65x10 <sup>5</sup> | 3.68x10 <sup>-2</sup> | 5.25x10 <sup>3</sup>      | 6.20                  | FALSE  |
| 870             |            | Isopropyl alcohol                      | 7.85x10 <sup>4</sup> | 1.09x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 870             |            | Mold Release                           | 9.34x10 <sup>4</sup> | 1.30x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 7439-98-7  | Molybdenum                             | 1.81x10 <sup>3</sup> | 2.52x10 <sup>-4</sup> | 50                        | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7697-37-2  | Nitric Acid (70%)                      | 4.84x10 <sup>4</sup> | 6.72x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             |            | Oakite Citridet                        | 3.33x10 <sup>5</sup> | 4.63x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 127-18-4   | Perchloroethylene                      | 1.01x10 <sup>6</sup> | 1.41x10 <sup>-1</sup> | 1.70x10 <sup>3</sup>      | 2.01                  | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                        | 3.67x10 <sup>4</sup> | 5.10x10 <sup>-3</sup> | 10                        | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 1310-58-3  | Potassium Hydroxide                    | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | 20                        | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-20-2  | Scandium                               | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             | 7631-86-9  | Silica                                 | 2.71x10 <sup>5</sup> | 3.77x10 <sup>-2</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 870             |            | Silver Epoxy                           | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             | 1310-73-2  | Sodium Hydroxide                       | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | 20                        | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                          | 3.67x10 <sup>4</sup> | 5.10x10 <sup>-3</sup> | 10                        | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 7704-98-5  | Titanium Hydride                       | 9.07x10 <sup>2</sup> | 1.26x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ultima Gold-Packard (alkylnaphthalene) | 5.27x10 <sup>5</sup> | 7.32x10 <sup>-2</sup> | No OEL                    |                       |        |
| 878             | 110-80-5   | 2-Ethoxyethanol                        | 1.24x10 <sup>2</sup> | 1.73x10 <sup>-5</sup> | 1.80x10 <sup>1</sup>      | 2.13x10 <sup>-2</sup> | FALSE  |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                  | 8.53x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 878             | 109-86-4   | 2-Methoxyethanol                       | 8.75x10 <sup>1</sup> | 1.22x10 <sup>-5</sup> | 3.00                      | 3.54x10 <sup>-3</sup> | FALSE  |
| 878             | 64-19-7    | Acetic acid                            | 1.28x10 <sup>4</sup> | 1.77x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 878             | 67-64-1    | Acetone                                | 3.92x10 <sup>5</sup> | 5.44x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 7429-90-5  | Aluminum (fume or dust)                | 1.07x10 <sup>4</sup> | 1.48x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)**  
**Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)           | 1.67x10 <sup>6</sup> | 2.31x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 878             | 12125-02-9 | Ammonium chloride                        | 9.99x10 <sup>4</sup> | 1.39x10 <sup>-2</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 1303-96-4  | Borates, tetra, sodium salts (anhydrous) | 1.00x10 <sup>4</sup> | 1.39x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 111-76-2   | Butyl cellosolve (R)                     | 5.97x10 <sup>3</sup> | 8.29x10 <sup>-4</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE  |
| 878             | 1305-62-0  | Calcium hydroxide                        | 1.12x10 <sup>4</sup> | 1.56x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 76-22-2    | Camphor                                  | 7.44x10 <sup>1</sup> | 1.03x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 1333-86-4  | Carbon black                             | 4.46x10 <sup>2</sup> | 6.19x10 <sup>-5</sup> | 3.50x10 <sup>1</sup>      | 4.13x10 <sup>-2</sup> | FALSE  |
| 878             | 2921-88-2  | Chlorpyrifos                             | 2.27                 | 3.15x10 <sup>-7</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-50-8  | Copper dusts and mists, as copper        | 7.60x10 <sup>4</sup> | 1.06x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 110-82-7   | Cyclohexane                              | 3.40x10 <sup>2</sup> | 4.73x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 878             | 108-93-0   | Cyclohexanol                             | 8.00                 | 1.11x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE  |
| 878             | 108-91-8   | Cyclohexylamine                          | 1.83x10 <sup>4</sup> | 2.54x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE  |
| 878             | 111-40-0   | Diethylene triamine                      | 2.07x10 <sup>3</sup> | 2.87x10 <sup>-4</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 878             | 109-87-5   | Dimethyoxymethane (methylal)             | 3.40                 | 4.72x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE  |
| 878             | 141-43-5   | Ethanolamine                             | 1.53x10 <sup>2</sup> | 2.12x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 141-78-6   | Ethyl acetate                            | 4.88x10 <sup>2</sup> | 6.77x10 <sup>-5</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 878             | 78-10-4    | Ethyl silicate                           | 4.79x10 <sup>2</sup> | 6.65x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 64-18-6    | Formic acid                              | 5.68x10 <sup>3</sup> | 7.89x10 <sup>-4</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>-1</sup> | FALSE  |
| 878             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)  | 2.94x10 <sup>4</sup> | 4.08x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 878             | 7783-06-4  | Hydrogen sulfide                         | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 61788-32-7 | Hydrogenated terphenyls                  | 3.18x10 <sup>3</sup> | 4.42x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-74-6  | Indium & compounds as indium             | 8.80x10 <sup>3</sup> | 1.22x10 <sup>-3</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)**  
**Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7553-56-2  | Iodine  | 7.00x10 <sup>2</sup> | 9.72x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1309-37-1  | Iron oxide fume (Fe <sub>2</sub> O <sub>3</sub> ) as iron | 1.03x10 <sup>4</sup> | 1.43x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7439-89-6  | Iron salts, soluble, as iron                              | 8.03x10 <sup>3</sup> | 1.12x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 26952-21-6 | Isoacetyl alcohol   | 6.80                 | 9.45x10 <sup>-7</sup> | 2.66x10 <sup>3</sup>      | 3.14                  | FALSE  |
| 878             | 110-19-0   | Isobutyl acetate  | 5.10x10 <sup>1</sup> | 7.08x10 <sup>-6</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 878             | 4098-71-9  | Isophorone diisocyanate                                   | 1.00                 | 1.39x10 <sup>-7</sup> | 4.50x10 <sup>-1</sup>     | 5.31x10 <sup>-4</sup> | FALSE  |
| 878             | 67-63-0    | Isopropyl alcohol   | 2.21x10 <sup>5</sup> | 3.07x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 878             | 1309-48-4  | Magnesium oxide   | 1.18x10 <sup>3</sup> | 1.63x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 878             | 5124-30-1  | Methylene bis(4-cyclohexylisocyanate)                     | 1.66x10 <sup>2</sup> | 2.31x10 <sup>-5</sup> | 5.40x10 <sup>-1</sup>     | 6.38x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-98-7  | Molybdenum as Molybdenum (insoluble compounds)            | 1.57x10 <sup>4</sup> | 2.18x10 <sup>-3</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 628-63-7   | n-Amyl acetate  | 4.38x10 <sup>2</sup> | 6.08x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 123-86-4   | n-Butyl acetate   | 1.36x10 <sup>3</sup> | 1.89x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE  |
| 878             | 71-36-3    | n-Butyl alcohol   | 6.74x10 <sup>3</sup> | 9.36x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)                              | 2.72x10 <sup>2</sup> | 3.78x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE  |
| 878             | 142-82-5   | n-Heptane   | 6.03x10 <sup>2</sup> | 8.37x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7697-37-2  | Nitric acid   | 6.33x10 <sup>4</sup> | 8.79x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-66-0   | Pentane   | 3.25x10 <sup>2</sup> | 4.51x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 8002-05-9  | Petroleum   | 4.53x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer)                         | 1.05x10 <sup>2</sup> | 1.46x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 7664-38-2  | Phosphoric acid   | 6.69x10 <sup>3</sup> | 9.30x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-06-4  | Platinum metal  | 1.02x10 <sup>4</sup> | 1.41x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-58-3  | Potassium hydroxide                                       | 2.90x10 <sup>3</sup> | 4.03x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 71-23-8    | Propyl alcohol                             | 4.06x10 <sup>3</sup>  | 5.63x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 878             | 8003-34-7  | Pyrethrins                                 | 2.36x10 <sup>-1</sup> | 3.28x10 <sup>-8</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 110-86-1   | Pyridine                                   | 1.94x10 <sup>2</sup>  | 2.69x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE  |
| 878             | 14808-60-7 | Quartz                                     | 4.02x10 <sup>3</sup>  | 5.59x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 78-92-2    | sec-Butyl alcohol                          | 1.34x10 <sup>3</sup>  | 1.86x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7631-86-9  | Silica, fused (respirable)                 | 6.46x10 <sup>3</sup>  | 8.97x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-22-4  | Silver metal                               | 1.40x10 <sup>4</sup>  | 1.95x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-4</sup> | TRUE   |
| 878             | 7631-90-5  | Sodium bisulfite                           | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-73-2  | Sodium hydroxide                           | 4.87x10 <sup>2</sup>  | 6.77x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 8052-41-3  | Stoddard solvent                           | 2.27x10 <sup>2</sup>  | 3.15x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7664-93-9  | Sulfuric acid                              | 2.18x10 <sup>2</sup>  | 3.02x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 75-65-0    | t-Butyl alcohol                            | 3.40                  | 4.72x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7440-25-7  | Tantalum                                   | 1.04x10 <sup>3</sup>  | 1.44x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 26140-60-3 | Terphenyls                                 | 4.77x10 <sup>2</sup>  | 6.62x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-99-9   | Tetrahydrofuran                            | 4.23x10 <sup>2</sup>  | 5.87x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 878             | 7722-88-5  | Tetrasodium pyrophosphate                  | 1.50                  | 2.08x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-31-5  | Tin metal                                  | 1.37x10 <sup>4</sup>  | 1.91x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate                   | 2.04x10 <sup>1</sup>  | 2.83x10 <sup>-6</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-33-7  | Tungsten as Wolfram insoluble compounds    | 2.74x10 <sup>4</sup>  | 3.81x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-62-2  | Vanadium (fume or dust)                    | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.75x10 <sup>-1</sup> | 3.82x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7440-66-6  | Zinc                                       | 9.64                  | 1.34x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 1314-13-2  | Zinc oxide                                 | 1.14x10 <sup>2</sup> | 1.58x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 67-64-1    | Acetone                                    | 4.68x10 <sup>5</sup> | 6.50x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 893             | 7726-95-6  | Bromine                                    | 1.55x10 <sup>2</sup> | 2.16x10 <sup>-5</sup> | 6.60                      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7722-84-1  | Hydrogen peroxide (Conc.> 52%)             | 1.30x10 <sup>4</sup> | 1.80x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 893             | 67-63-0    | Isopropyl alcohol                          | 1.77x10 <sup>5</sup> | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 893             | 7697-37-2  | Nitric acid                                | 1.36x10 <sup>4</sup> | 1.89x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 1310-58-3  | Potassium hydroxide                        | 2.04x10 <sup>3</sup> | 2.84x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-93-9  | Sulfuric acid                              | 7.07x10 <sup>4</sup> | 9.82x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.40x10 <sup>3</sup> | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 64-19-7    | Acetic acid                                | 4.95x10 <sup>4</sup> | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 897             | 67-64-1    | Acetone                                    | 6.84x10 <sup>4</sup> | 9.51x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 897             | 106-92-3   | Allyl glycidyl ether                       | 1.67x10 <sup>1</sup> | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE  |
| 897             | 1344-28-1  | Aluminum oxide (fibrous forms)             | 1.50x10 <sup>3</sup> | 2.08x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 128-37-0   | Butylated hydroxytoluene                   | 9.90x10 <sup>1</sup> | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 420-04-2   | Cyanamide                                  | 2.47x10 <sup>1</sup> | 3.44x10 <sup>-6</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 110-82-7   | Cyclohexane                                | 2.99                 | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 897             | 107-66-4   | Dibutyl phosphate                          | 2.72x10 <sup>2</sup> | 3.78x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 124-40-3   | Dimethylamine                              | 3.98x10 <sup>2</sup> | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 897             | 141-78-6   | Ethyl acetate                              | 1.78x10 <sup>4</sup> | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                | 2.18x10 <sup>4</sup> | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE  |
| 897             | 78-10-4    | Ethyl silicate                             | 6.27x10 <sup>2</sup> | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)    | 2.36x10 <sup>3</sup> | 3.28x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                           | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|------------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 67-63-0    | Isopropyl alcohol                  | 7.77x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 897             | 8008-20-6  | Kerosene                           | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE  |
| 897             | 126-98-7   | Methacrylonitrile                  | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 897             | 681-84-5   | Methyl silicate                    | 2.24x10 <sup>2</sup>  | 3.12x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 897             | 71-36-3    | n-Butyl alcohol                    | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 897             | 142-82-5   | n-Heptane                          | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 7697-37-2  | Nitric acid                        | 1.60x10 <sup>1</sup>  | 2.22x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 144-62-7   | Oxalic acid                        | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-66-0   | Pentane                            | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 9003-53-6  | Phenylethylene (Styrene, monomer)  | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 88-89-1    | Picric acid (2,4,6-Trinitrophenol) | 9.95                  | 1.38x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 897             | 1310-58-3  | Potassium hydroxide                | 9.30x10 <sup>3</sup>  | 1.29x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 71-23-8    | Propyl alcohol                     | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 897             | 7440-22-4  | Silver Metal                       | 1.68x10 <sup>1</sup>  | 2.33x10 <sup>-6</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-4</sup> | FALSE  |
| 897             | 1310-73-2  | Sodium hydroxide                   | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-93-9  | Sulfuric acid                      | 7.75x10 <sup>3</sup>  | 1.08x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-99-9   | Tetrahydrofuran                    | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 897             | 7719-09-7  | Thionyl chloride                   | 4.89x10 <sup>3</sup>  | 6.80x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 897             | 76-03-9    | Trichloroacetic acid               | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 905             | 67-64-1    | Acetone                            | 1.40x10 <sup>4</sup>  | 1.95x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 905             | 67-63-0    | Isopropyl alcohol                  | 1.24x10 <sup>4</sup>  | 1.72x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 905             | 1309-48-4  | Magnesium oxide                    | 8.00x10 <sup>2</sup>  | 1.11x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |

**Table D.1–8. 1996 Annual Purchases of Toxic Air Pollutants (TAPs)  
Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 905             | 109-99-9   | Tetrahydrofuran   | 3.34x10 <sup>3</sup> | 4.64x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 963             | 67-63-0    | Isopropyl alcohol | 7.85x10 <sup>2</sup> | 1.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 981             | 67-64-1    | Acetone           | 2.99x10 <sup>3</sup> | 4.15x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 981             | 7664-93-9  | Sulfuric acid     | 4.69x10 <sup>4</sup> | 6.52x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 986             | 67-64-1    | Acetone           | 2.99x10 <sup>3</sup> | 4.15x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |

<sup>a</sup> No CAS number is available

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| <b>605</b>      | 79-09-4    | Propionic acid                          | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |
| <b>605</b>      | 7664-93-9  | Sulfuric acid                           | 8.25x10 <sup>1</sup> | 1.15x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| <b>6580</b>     | 141-78-6   | Ethyl acetate                           | 7.20x10 <sup>3</sup> | 1.00x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| <b>6580</b>     | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 4.99x10 <sup>2</sup> | 6.94x10 <sup>-5</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| <b>6580</b>     | 7697-37-2  | Nitric acid                             | 1.57x10 <sup>4</sup> | 2.19x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| <b>6580</b>     | 1310-73-2  | Sodium hydroxide                        | 1.13x10 <sup>4</sup> | 1.57x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| <b>6580</b>     | 7664-93-9  | Sulfuric acid                           | 9.20x10 <sup>3</sup> | 1.28x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| <b>6920</b>     | 7697-37-2  | Nitric acid                             | 1.87x10 <sup>2</sup> | 2.60x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| <b>6920</b>     | 1310-73-2  | Sodium hydroxide                        | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| <b>6920</b>     | 7440-66-6  | Zinc                                    | 1.00x10 <sup>3</sup> | 1.39x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| <b>858</b>      | 64-19-7    | Acetic acid                             | 5.64x10 <sup>4</sup> | 7.83x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| <b>858</b>      | 67-64-1    | Acetone                                 | 3.04x10 <sup>4</sup> | 4.22x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| <b>858</b>      | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 3.10x10 <sup>6</sup> | 4.31x10 <sup>-1</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | TRUE   |
| <b>858</b>      | 7697-37-2  | Nitric acid                             | 3.99x10 <sup>6</sup> | 5.54x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| <b>858</b>      | 7664-38-2  | Phosphoric acid                         | 7.59x10 <sup>4</sup> | 1.05x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| <b>858</b>      | 7803-62-5  | Silane (silicon tetrahydride)           | 1.78x10 <sup>5</sup> | 2.47x10 <sup>-2</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-2</sup> | FALSE  |
| <b>858</b>      | 1310-73-2  | Sodium hydroxide                        | 6.12x10 <sup>7</sup> | 8.50                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| <b>858</b>      | 7664-93-9  | Sulfuric acid                           | 5.78x10 <sup>4</sup> | 8.02x10 <sup>3</sup>  | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| <b>870</b>      | 64-19-7    | Acetic Acid, Glacial                    | 1.05x10 <sup>5</sup> | 1.45x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| <b>870</b>      | 64-19-7    | Acetic Acid, Glacial                    | 1.15x10 <sup>5</sup> | 1.60x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| <b>870</b>      | 67-64-1    | Acetone                                 | 6.46x10 <sup>6</sup> | 8.97x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| <b>870</b>      | 71-36-3    | Alcohol, Butyl                          | 1.21x10 <sup>4</sup> | 1.69x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| <b>870</b>      | 67-63-0    | Alcohol, Isopropyl                      | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7429-90-5  | Aluminum  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 870             | 1344-28-1  | Aluminum Oxide  | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 1336-21-6  | Ammonium Hydroxide                                      | 1.35x10 <sup>4</sup> | 1.87x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1113-50-1  | Boric Acid  | 1.20x10 <sup>5</sup> | 1.66x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 11-15-9    | Cellulose Acetate                                       | 6.52x10 <sup>3</sup> | 9.05x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Cerric Ammonium Nitrate                                 | 2.00x10 <sup>6</sup> | 2.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Citridet Cleaner  | 1.15x10 <sup>6</sup> | 1.59x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 7440-50-8  | Copper  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 870             | 7440-50-8  | Copper (0.10%)  | 5.99x10 <sup>1</sup> | 8.32x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             |            | Carboxyl terminated acrylonitrile-butadiene Epoxy Resin | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Curing Agent Z (37% Methylene dianiline)                | 4.53x10 <sup>5</sup> | 6.29x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | 2,6-diethylaniline curing agent                         | 3.59x10 <sup>5</sup> | 4.99x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Diala oil   | 5.01x10 <sup>5</sup> | 6.95x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 106-42-3   | Di-p Xylene   | 9.07x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.34x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 870             | 7440-52-0  | Erbium  | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             |            | Fluorinert  | 5.60x10 <sup>6</sup> | 7.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Glass microballoons filler                              | 7.48x10 <sup>4</sup> | 1.04x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Hexylene glycol   | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 1309-37-1  | Iron (53%)  | 3.17x10 <sup>4</sup> | 4.41x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 123-92-2   | Iso Amyl Acetate  | 7.94x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | 5.25x10 <sup>3</sup>      | 6.20                  | FALSE  |
| 870             |            | Isopropyl alcohol                                       | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 870             |            | Mold Release  | 2.81x10 <sup>5</sup> | 3.90x10 <sup>-2</sup> | No OEL                    |                       |        |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7439-98-7  | Molybdenum                               | 6.66x10 <sup>3</sup> | 9.24x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7697-37-2  | Nitric Acid (70%)                        | 1.60x10 <sup>5</sup> | 2.22x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             |            | Oakite Citridet                          | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             | 127-18-4   | Perchloroethylene                        | 1.01x10 <sup>6</sup> | 1.41x10 <sup>-1</sup> | 1.70x10 <sup>3</sup>      | 2.01                  | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                          | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 1310-58-3  | Potassium Hydroxide                      | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-20-2  | Scandium                                 | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 7631-86-9  | Silica                                   | 9.04x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | TRUE   |
| 870             |            | Silver Epoxy                             | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1310-73-2  | Sodium Hydroxide                         | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                            | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 7704-98-5  | Titanium Hydride                         | 3.29x10 <sup>3</sup> | 4.57x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ultima Gold – Packard (alkylnaphthalene) | 1.58x10 <sup>6</sup> | 2.20x10 <sup>-1</sup> | No OEL                    |                       |        |
| 878             | 110-80-5   | 2-Ethoxyethanol                          | 1.86x10 <sup>2</sup> | 2.59x10 <sup>-5</sup> | 1.80x10 <sup>1</sup>      | 2.13x10 <sup>-2</sup> | FALSE  |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                    | 1.28x10 <sup>4</sup> | 1.78x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 878             | 109-86-4   | 2-Methoxyethanol                         | 1.31x10 <sup>2</sup> | 1.82x10 <sup>-5</sup> | 3.00                      | 3.54x10 <sup>-3</sup> | FALSE  |
| 878             | 64-19-7    | Acetic acid                              | 1.92x10 <sup>4</sup> | 2.66x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 878             | 67-64-1    | Acetone                                  | 5.88x10 <sup>5</sup> | 8.16x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 7429-90-5  | Aluminum (fume or dust)                  | 1.60x10 <sup>4</sup> | 2.23x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)           | 2.50x10 <sup>6</sup> | 3.47x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 878             | 12125-02-9 | Ammonium chloride                        | 1.50x10 <sup>5</sup> | 2.08x10 <sup>-2</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 1303-96-4  | Borates, tetra, sodium salts (anhydrous) | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 111-76-2   | Butyl cellosolve (R)                     | 8.95x10 <sup>3</sup> | 1.24x10 <sup>-3</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE  |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 1305-62-0  | Calcium hydroxide                       | 1.68x10 <sup>4</sup> | 2.34x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 76-22-2    | Camphor                                 | 1.12x10 <sup>2</sup> | 1.55x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 1333-86-4  | Carbon black                            | 6.68x10 <sup>2</sup> | 9.28x10 <sup>-5</sup> | 3.50x10 <sup>1</sup>      | 4.13x10 <sup>-2</sup> | FALSE  |
| 878             | 2921-88-2  | Chlorpyrifos                            | 3.40                 | 4.72x10 <sup>-7</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-50-8  | Copper dusts and mists, as copper       | 1.14x10 <sup>5</sup> | 1.58x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 878             | 110-82-7   | Cyclohexane                             | 5.11x10 <sup>2</sup> | 7.09x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 878             | 108-93-0   | Cyclohexanol                            | 1.20x10 <sup>1</sup> | 1.67x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE  |
| 878             | 108-91-8   | Cyclohexylamine                         | 2.74x10 <sup>4</sup> | 3.81x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE  |
| 878             | 111-40-0   | Diethylene triamine                     | 3.10x10 <sup>3</sup> | 4.31x10 <sup>-4</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 878             | 109-87-5   | Dimethoxymethane (methylal)             | 5.10                 | 7.09x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE  |
| 878             | 141-43-5   | Ethanolamine                            | 2.29x10 <sup>2</sup> | 3.18x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 141-78-6   | Ethyl acetate                           | 7.32x10 <sup>2</sup> | 1.02x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 878             | 78-10-4    | Ethyl silicate                          | 7.18x10 <sup>2</sup> | 9.97x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 64-18-6    | Formic acid                             | 8.52x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>1</sup>  | FALSE  |
| 878             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 4.41x10 <sup>4</sup> | 6.12x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>2</sup>  | FALSE  |
| 878             | 7783-06-4  | Hydrogen sulfide                        | 5.49x10 <sup>3</sup> | 7.62x10 <sup>-4</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 61788-32-7 | Hydrogenated terphenyls                 | 4.77x10 <sup>3</sup> | 6.62x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-74-6  | Indium & compounds as indium            | 1.32x10 <sup>4</sup> | 1.83x10 <sup>-3</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 878             | 7553-56-2  | Iodine                                  | 1.05x10 <sup>3</sup> | 1.46x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1309-37-1  | Iron oxide fume ( $Fe_2O_3$ ) as iron   | 1.54x10 <sup>4</sup> | 2.14x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7439-89-6  | Iron salts, soluble, as iron            | 1.20x10 <sup>4</sup> | 1.67x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 26952-21-6 | Isoacetyl alcohol                       | 1.02x10 <sup>1</sup> | 1.42x10 <sup>-6</sup> | 2.66x10 <sup>3</sup>      | 3.14                  | FALSE  |
| 878             | 110-19-0   | Isobutyl acetate                        | 7.64x10 <sup>1</sup> | 1.06x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                       | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 4098-71-9  | Isophorone diisocyanate                        | 1.50                  | 2.08x10 <sup>-7</sup> | 4.50x10 <sup>-1</sup>     | 5.31x10 <sup>-4</sup> | FALSE  |
| 878             | 67-63-0    | Isopropyl alcohol                              | 3.32x10 <sup>5</sup>  | 4.61x10 <sup>2</sup>  | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 878             | 1309-48-4  | Magnesium oxide                                | 1.77x10 <sup>3</sup>  | 2.45x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 878             | 5124-30-1  | Methylene bis(4-cyclohexylisocyanate)          | 2.49x10 <sup>2</sup>  | 3.46x10 <sup>-5</sup> | 5.40x10 <sup>-1</sup>     | 6.38x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-98-7  | Molybdenum as molybdenum (insoluble compounds) | 2.36x10 <sup>4</sup>  | 3.28x10 <sup>-3</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 628-63-7   | n-Amyl acetate                                 | 6.57x10 <sup>2</sup>  | 9.12x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 123-86-4   | n-Butyl acetate                                | 2.05x10 <sup>3</sup>  | 2.84x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE  |
| 878             | 71-36-3    | n-Butyl alcohol                                | 1.01x10 <sup>4</sup>  | 1.40x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)                   | 4.08x10 <sup>2</sup>  | 5.67x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE  |
| 878             | 142-82-5   | n-Heptane                                      | 9.04x10 <sup>2</sup>  | 1.26x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7697-37-2  | Nitric acid                                    | 9.49x10 <sup>4</sup>  | 1.32x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-66-0   | Pentane  | 4.87x10 <sup>2</sup>  | 6.76x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 8002-05-9  | Petroleum                                      | 6.80x10 <sup>2</sup>  | 9.44x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer)              | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 7664-38-2  | Phosphoric acid                                | 1.00x10 <sup>4</sup>  | 1.39x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-06-4  | Platinum metal                                 | 1.53x10 <sup>4</sup>  | 2.12x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-58-3  | Potassium hydroxide                            | 4.35x10 <sup>3</sup>  | 6.05x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 71-23-8    | Propyl alcohol                                 | 6.08x10 <sup>3</sup>  | 8.45x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 878             | 8003-34-7  | Pyrethrins                                     | 3.54x10 <sup>-1</sup> | 4.91x10 <sup>-8</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 110-86-1   | Pyridine                                       | 2.90x10 <sup>2</sup>  | 4.03x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE  |
| 878             | 14808-60-7 | Quartz   | 6.03x10 <sup>3</sup>  | 8.38x10 <sup>-4</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 78-92-2    | sec-Butyl alcohol                              | 2.01x10 <sup>3</sup>  | 2.79x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7631-86-9  | Silica, fused (respirable)                     | 9.68x10 <sup>3</sup>  | 1.34x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7440-22-4  | Silver metal                              | 2.10x10 <sup>4</sup>  | 2.92x10 <sup>-3</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | TRUE   |
| 878             | 7631-90-5  | Sodium bisulfite                          | 7.50x10 <sup>2</sup>  | 1.04x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-73-2  | Sodium hydroxide                          | 7.31x10 <sup>2</sup>  | 1.01x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 8052-41-3  | Stoddard solvent                          | 3.41x10 <sup>2</sup>  | 4.73x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7664-93-9  | Sulfuric acid                             | 3.27x10 <sup>2</sup>  | 4.54x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 75-65-0    | t-Butyl alcohol                           | 5.10                  | 7.09x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7440-25-7  | Tantalum                                  | 1.56x10 <sup>3</sup>  | 2.17x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 26140-60-3 | Terphenyls                                | 7.15x10 <sup>2</sup>  | 9.94x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-99-9   | Tetrahydrofuran                           | 6.34x10 <sup>2</sup>  | 8.81x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 878             | 7722-88-5  | Tetrasodium pyrophosphate                 | 2.25                  | 3.12x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-31-5  | Tin metal                                 | 2.06x10 <sup>4</sup>  | 2.86x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate                  | 3.06x10 <sup>1</sup>  | 4.25x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-33-7  | Tungsten as Wolfram insoluble compounds   | 4.11x10 <sup>4</sup>  | 5.71x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-62-2  | Vanadium (fume or dust)                   | 3.27x10 <sup>4</sup>  | 4.54x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 8032-32-4  | Varnish Makers and Painters (V&P) naphtha | 4.12x10 <sup>-1</sup> | 5.73x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7440-66-6  | Zinc                                      | 1.45x10 <sup>1</sup>  | 2.01x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1314-13-2  | Zinc oxide                                | 1.71x10 <sup>2</sup>  | 2.37x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 67-64-1    | Acetone                                   | 4.68x10 <sup>5</sup>  | 6.50x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 893             | 7726-95-6  | Bromine                                   | 1.55x10 <sup>2</sup>  | 2.16x10 <sup>-5</sup> | 6.60                      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)   | 1.30x10 <sup>4</sup>  | 1.80x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 893             | 67-63-0    | Isopropyl alcohol                         | 1.77x10 <sup>5</sup>  | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 893             | 7697-37-2  | Nitric acid                               | 1.36x10 <sup>4</sup>  | 1.89x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 1310-58-3  | Potassium hydroxide                       | 2.04x10 <sup>3</sup>  | 2.84x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                    | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 893             | 7664-93-9  | Sulfuric acid                               | 7.07x10 <sup>-4</sup> | 9.82x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 893             | 8032-32-4  | Varnish Makers and Painters (V/M&P) naphtha | 2.40x10 <sup>3</sup>  | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 64-19-7    | Acetic acid                                 | 4.95x10 <sup>-4</sup> | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 897             | 67-64-1    | Acetone                                     | 6.84x10 <sup>-4</sup> | 9.51x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 897             | 106-92-3   | Allyl glycidyl ether                        | 1.67x10 <sup>1</sup>  | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE  |
| 897             | 1344-28-1  | Aluminum oxide (fibrous forms)              | 1.50x10 <sup>3</sup>  | 2.08x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 128-37-0   | Butylated hydroxytoluene                    | 9.90x10 <sup>1</sup>  | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 420-04-2   | Cyanamide                                   | 2.47x10 <sup>1</sup>  | 3.44x10 <sup>-6</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 110-82-7   | Cyclohexane                                 | 2.99                  | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 897             | 107-66-4   | Diethyl phosphate                           | 2.72x10 <sup>2</sup>  | 3.78x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 124-40-3   | Dimethylamine                               | 3.98x10 <sup>2</sup>  | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 897             | 141-78-6   | Ethyl acetate                               | 1.78x10 <sup>4</sup>  | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                 | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE  |
| 897             | 78-10-4    | Ethyl silicate                              | 6.27x10 <sup>2</sup>  | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)     | 2.36x10 <sup>3</sup>  | 3.28x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 897             | 67-63-0    | Isopropyl alcohol                           | 7.77x10 <sup>-4</sup> | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 897             | 8008-20-6  | Kerosene                                    | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE  |
| 897             | 126-98-7   | Methacrylonitrile                           | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 897             | 681-84-5   | Methyl silicate                             | 2.24x10 <sup>2</sup>  | 3.12x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 897             | 71-36-3    | n-Butyl alcohol                             | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 897             | 142-82-5   | n-Heptane                                   | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 7697-37-2  | Nitric acid                                 | 1.60x10 <sup>1</sup>  | 2.22x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 144-62-7   | oxalic acid                                 | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |

**Table D.1–9. Projected Toxic Air Pollutant (TAP) Emissions  
No Action Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                           | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|------------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 109-66-0   | Pentane                            | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 9003-53-6  | Phenylethylen (styrene, monomer)   | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 88-89-1    | Picric acid (2,4,6-trinitrophenol) | 9.95                  | 1.38x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 897             | 1310-58-3  | Potassium hydroxide                | 9.30x10 <sup>3</sup>  | 1.29x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 71-23-8    | Propyl alcohol                     | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 897             | 7440-22-4  | Silver metal                       | 1.68x10 <sup>1</sup>  | 2.33x10 <sup>-6</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | FALSE  |
| 897             | 1310-73-2  | Sodium hydroxide                   | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-93-9  | Sulfuric acid                      | 7.75x10 <sup>3</sup>  | 1.08x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-99-9   | Tetrahydrofuran                    | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 897             | 7719-09-7  | Thionyl chloride                   | 4.89x10 <sup>3</sup>  | 6.80x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 897             | 76-03-9    | Trichloroacetic acid               | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 905             | 67-64-1    | Acetone                            | 2.81x10 <sup>4</sup>  | 3.90x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 905             | 67-63-0    | Isopropyl alcohol                  | 2.47x10 <sup>4</sup>  | 3.44x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 905             | 1309-48-4  | Magnesium oxide                    | 1.60x10 <sup>3</sup>  | 2.22x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 905             | 109-99-9   | Tetrahydrofuran                    | 6.69x10 <sup>3</sup>  | 9.29x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 963             | 67-63-0    | Isopropyl alcohol                  | 7.85x10 <sup>2</sup>  | 1.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 981             | 67-64-1    | Acetone                            | 8.97x10 <sup>3</sup>  | 1.25x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 981             | 7664-93-9  | Sulfuric acid                      | 1.41x10 <sup>5</sup>  | 1.95x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 986             | 67-64-1    | Acetone                            | 1.50x10 <sup>4</sup>  | 2.08x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 79-09-4    | Propionic acid                          | 2.06x10 <sup>2</sup> | 2.87x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |
| 605             | 7664-93-9  | Sulfuric acid                           | 1.65x10 <sup>2</sup> | 2.29x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6580            | 141-78-6   | Ethyl acetate                           | 5.40x10 <sup>3</sup> | 7.50x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 6580            | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 1.33x10 <sup>3</sup> | 1.85x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 6580            | 7697-37-2  | Nitric acid                             | 4.20x10 <sup>4</sup> | 5.83x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6580            | 1310-73-2  | Sodium hydroxide                        | 1.50x10 <sup>4</sup> | 2.09x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6580            | 7664-93-9  | Sulfuric acid                           | 2.76x10 <sup>4</sup> | 3.83x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6920            | 7697-37-2  | Nitric acid                             | 3.75x10 <sup>2</sup> | 5.21x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6920            | 1310-73-2  | Sodium hydroxide                        | 9.07x10 <sup>2</sup> | 1.26x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6920            | 7440-66-6  | Zinc                                    | 2.00x10 <sup>3</sup> | 2.78x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 858             | 64-19-7    | Acetic acid                             | 6.04x10 <sup>4</sup> | 8.39x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 858             | 67-64-1    | Acetone                                 | 3.26x10 <sup>4</sup> | 4.53x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 3.33x10 <sup>6</sup> | 4.62x10 <sup>-1</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | TRUE   |
| 858             | 7697-37-2  | Nitric acid                             | 4.27x10 <sup>6</sup> | 5.93x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-38-2  | Phosphoric acid                         | 8.13x10 <sup>4</sup> | 1.13x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 858             | 7803-62-5  | Silane (silicon tetrahydride)           | 1.90x10 <sup>5</sup> | 2.65x10 <sup>-2</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-2</sup> | FALSE  |
| 858             | 1310-73-2  | Sodium hydroxide                        | 6.56x10 <sup>7</sup> | 9.11                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-93-9  | Sulfuric acid                           | 6.19x10 <sup>4</sup> | 8.60x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid                             | 1.05x10 <sup>5</sup> | 1.45x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid, Glacial                    | 1.15x10 <sup>5</sup> | 1.60x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 67-64-1    | Acetone                                 | 6.46x10 <sup>6</sup> | 8.97x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 870             | 71-36-3    | Alcohol, Butyl                          | 1.21x10 <sup>4</sup> | 1.69x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 870             | 67-63-0    | Alcohol, Isopropyl                      | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7429-90-5  | Aluminum  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 870             | 1344-28-1  | Ammonium Oxide  | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 1336-21-6  | Ammonium Hydroxide                                      | 1.35x10 <sup>4</sup> | 1.87x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1113-50-1  | Boric Acid  | 1.20x10 <sup>5</sup> | 1.66x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 11-15-9    | Cellosolve Acetate                                      | 6.52x10 <sup>3</sup> | 9.05x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ceric Ammonium Nitrate                                  | 2.00x10 <sup>6</sup> | 2.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Citridet Cleaner  | 1.15x10 <sup>6</sup> | 1.59x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 7440-50-8  | Copper  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 870             | 7440-50-8  | Copper (0.10%)  | 5.99x10 <sup>1</sup> | 8.32x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             |            | Carboxyl terminated acrylonitrile-butadiene Epoxy Resin | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Curing Agent Z (37% Methylene dianiline)                | 4.53x10 <sup>5</sup> | 6.29x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | 2,6-diethylaniline curing agent                         | 3.59x10 <sup>5</sup> | 4.99x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Diala oil   | 5.01x10 <sup>5</sup> | 6.95x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 106-42-3   | Di- $\rho$ Xylene                                       | 9.07x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.35x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 870             | 7440-52-0  | Erbium  | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             |            | Fluorinert  | 5.60x10 <sup>6</sup> | 7.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Glass microballoons filler                              | 7.48x10 <sup>4</sup> | 1.04x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Hexylene glycol   | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 1309-37-1  | Iron (53%)  | 3.17x10 <sup>4</sup> | 4.41x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 123-92-2   | Iso Amyl Acetate  | 7.94x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | 5.25x10 <sup>3</sup>      | 6.20                  | FALSE  |
| 870             |            | Isopropyl alcohol                                       | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 870             |            | Mold Release  | 2.81x10 <sup>5</sup> | 3.90x10 <sup>-2</sup> | No OEL                    |                       |        |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEI/100 µg/m <sub>3</sub> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7439-98-7  | Molybdenum                               | 6.66x10 <sup>3</sup> | 9.24x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7697-37-2  | Nitric Acid (70%)                        | 1.60x10 <sup>5</sup> | 2.22x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             |            | Oakite Citridet                          | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             | 127-18-4   | Perchloroethylene                        | 1.01x10 <sup>6</sup> | 1.41x10 <sup>-1</sup> | 1.70x10 <sup>3</sup>      | 2.01                  | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                          | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 1310-58-3  | Potassium Hydroxide                      | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-20-2  | Scandium                                 | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 7631-86-9  | Silica                                   | 9.04x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | TRUE   |
| 870             |            | Silver Epoxy                             | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1310-73-2  | Sodium Hydroxide                         | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                            | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 7704-98-5  | Titanium Hydride                         | 3.29x10 <sup>3</sup> | 4.57x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ultima Gold – Packard (alkylnaphthalene) | 1.58x10 <sup>6</sup> | 2.20x10 <sup>-1</sup> | No OEL                    |                       |        |
| 878             | 110-80-5   | 2-Ethoxyethanol                          | 2.48x10 <sup>2</sup> | 3.45x10 <sup>-5</sup> | 1.80x10 <sup>1</sup>      | 2.13x10 <sup>-2</sup> | FALSE  |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                    | 1.71x10 <sup>4</sup> | 2.37x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 878             | 109-86-4   | 2-Methoxyethanol                         | 1.75x10 <sup>2</sup> | 2.43x10 <sup>-5</sup> | 3.00                      | 3.54x10 <sup>-3</sup> | FALSE  |
| 878             | 64-19-7    | Acetic acid                              | 2.55x10 <sup>4</sup> | 3.55x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 878             | 67-64-1    | Acetone                                  | 7.83x10 <sup>5</sup> | 1.09x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 7429-90-5  | Aluminum (fume or dust)                  | 2.14x10 <sup>4</sup> | 2.97x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)           | 3.33x10 <sup>6</sup> | 4.63x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 878             | 12125-02-9 | Ammonium chloride                        | 2.00x10 <sup>5</sup> | 2.78x10 <sup>-2</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 1303-96-4  | Borates, tetra, sodium salts (anhydrous) | 2.00x10 <sup>4</sup> | 2.78x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 111-76-2   | Butyl cellosolve (R)                     | 1.19x10 <sup>4</sup> | 1.66x10 <sup>-3</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 1305-62-0  | Calcium hydroxide                                   | 2.24x10 <sup>4</sup> | 3.12x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 76-22-2    | Camphor   | 1.49x10 <sup>2</sup> | 2.07x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 1333-86-4  | Carbon black  | 8.91x10 <sup>2</sup> | 1.24x10 <sup>-4</sup> | 3.50x10 <sup>1</sup>      | 4.13x10 <sup>-2</sup> | FALSE  |
| 878             | 2921-88-2  | Chlorpyrifos  | 4.54                 | 6.30x10 <sup>-7</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-50-8  | Copper dusts and mists, as copper                   | 1.52x10 <sup>5</sup> | 2.11x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 878             | 110-82-7   | Cyclohexane   | 6.81x10 <sup>2</sup> | 9.46x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 878             | 108-93-0   | Cyclohexanol  | 1.60x10 <sup>1</sup> | 2.22x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE  |
| 878             | 108-91-8   | Cyclohexylamine                                     | 3.65x10 <sup>4</sup> | 5.07x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE  |
| 878             | 111-40-0   | Diethylene triamine                                 | 4.13x10 <sup>3</sup> | 5.74x10 <sup>-4</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 878             | 109-87-5   | Dimethoxymethane (methylal)                         | 6.80                 | 9.45x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE  |
| 878             | 141-43-5   | Ethanolamine  | 3.05x10 <sup>2</sup> | 4.24x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 141-78-6   | Ethyl acetate                                       | 9.75x10 <sup>2</sup> | 1.35x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 878             | 78-10-4    | Ethyl silicate                                      | 9.57x10 <sup>2</sup> | 1.33x10 <sup>-4</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 64-18-6    | Formic acid   | 1.14x10 <sup>4</sup> | 1.58x10 <sup>-3</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>-1</sup> | FALSE  |
| 878             | 7722-84-1  | Hydrogen peroxide (concentration> 52%)              | 5.88x10 <sup>4</sup> | 8.16x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 878             | 7783-06-4  | Hydrogen sulfide                                    | 7.32x10 <sup>3</sup> | 1.02x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 61788-32-7 | Hydrogenated terphenyls                             | 6.36x10 <sup>3</sup> | 8.83x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-74-6  | Indium & compounds as indium                        | 1.76x10 <sup>4</sup> | 2.44x10 <sup>-3</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 878             | 7553-56-2  | Iodine  | 1.40x10 <sup>3</sup> | 1.94x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1309-37-1  | Iron oxide fume ( $\text{Fe}_2\text{O}_3$ ) as iron | 2.05x10 <sup>4</sup> | 2.85x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7439-89-6  | Iron salts, soluble, as iron                        | 1.61x10 <sup>4</sup> | 2.23x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 26952-21-6 | Isoacetyl alcohol                                   | 1.36x10 <sup>1</sup> | 1.89x10 <sup>-6</sup> | 2.66x10 <sup>3</sup>      | 3.14                  | FALSE  |
| 878             | 110-19-0   | Isobutyl acetate                                    | 1.02x10 <sup>2</sup> | 1.42x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER  | CHEMICAL                                       | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEI/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|-------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 4098-71-9   | Isophorone diisocyanate                        | 2.00                  | 2.78x10 <sup>-7</sup> | 4.50x10 <sup>-1</sup>     | 5.31x10 <sup>-4</sup> | FALSE  |
| 878             | 67-63-0     | Isopropyl alcohol                              | 4.42x10 <sup>5</sup>  | 6.14x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 878             | 1309-48-4   | Magnesium oxide                                | 2.35x10 <sup>3</sup>  | 3.27x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 878             | 5124-30-1   | Methylene bis(4-cyclohexylisocyanate)          | 3.32x10 <sup>2</sup>  | 4.61x10 <sup>-5</sup> | 5.40x10 <sup>-1</sup>     | 6.38x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-98-7   | Molybdenum as molybdenum (insoluble compounds) | 3.15x10 <sup>4</sup>  | 4.37x10 <sup>-3</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 628-63-7    | n-Amyl acetate                                 | 8.76x10 <sup>2</sup>  | 1.22x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 123-86-4    | n-Butyl acetate                                | 2.73x10 <sup>3</sup>  | 3.79x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE  |
| 878             | 71-36-3     | n-Butyl alcohol                                | 1.35x10 <sup>4</sup>  | 1.87x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 2426-08-6   | n-Butyl glycidyl ether (BGE)                   | 5.44x10 <sup>2</sup>  | 7.56x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE  |
| 878             | 142-82-5    | n-Heptane                                      | 1.21x10 <sup>3</sup>  | 1.67x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7697-37-2   | Nitric acid                                    | 1.27x10 <sup>5</sup>  | 1.76x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-66-0    | Pentane  | 6.49x10 <sup>2</sup>  | 9.02x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 8002-05-9   | Petroleum                                      | 9.07x10 <sup>2</sup>  | 1.26x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 9003-53-6   | Phenylethylene (styrene, monomer)              | 2.10x10 <sup>2</sup>  | 2.92x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 7664-38-2   | Phosphoric acid                                | 1.34x10 <sup>4</sup>  | 1.86x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-06-4   | Platinum metal                                 | 2.03x10 <sup>4</sup>  | 2.83x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-58-3   | Potassium hydroxide                            | 5.80x10 <sup>3</sup>  | 8.06x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 71-23-8     | Propyl alcohol                                 | 8.11x10 <sup>3</sup>  | 1.13x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 878             | 8003-34-7   | Pyrethrins                                     | 4.72x10 <sup>-1</sup> | 6.55x10 <sup>-8</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 110-86-1    | Pyridine                                       | 3.87x10 <sup>2</sup>  | 5.38x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE  |
| 878             | 144808-60-7 | Quartz   | 8.05x10 <sup>3</sup>  | 1.12x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 78-92-2     | sec-Butyl alcohol                              | 2.67x10 <sup>3</sup>  | 3.71x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7631-86-9  | Silica, fused (respirable)                           | 1.29x10 <sup>4</sup>  | 1.79x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-22-4  | Silver metal   | 2.80x10 <sup>4</sup>  | 3.89x10 <sup>-3</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | TRUE   |
| 878             | 7631-90-5  | Sodium bisulfite                                     | 1.00x10 <sup>3</sup>  | 1.39x10 <sup>-4</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-73-2  | Sodium hydroxide                                     | 9.74x10 <sup>2</sup>  | 1.35x10 <sup>-4</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 8052-41-3  | Stoddard solvent                                     | 4.54x10 <sup>2</sup>  | 6.31x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7664-93-9  | Sulfuric acid  | 4.35x10 <sup>2</sup>  | 6.05x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 75-65-0    | t-Butyl alcohol                                      | 6.80                  | 9.45x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7440-25-7  | Tantalum   | 2.08x10 <sup>3</sup>  | 2.89x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 26140-60-3 | Terphenyls   | 9.54x10 <sup>2</sup>  | 1.32x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-99-9   | Tetrahydrofuran                                      | 8.46x10 <sup>2</sup>  | 1.17x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 878             | 7722-88-5  | Tetrasodium pyrophosphate                            | 3.00                  | 4.17x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-31-5  | Tin metal  | 2.74x10 <sup>4</sup>  | 3.81x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate                             | 4.08x10 <sup>1</sup>  | 5.67x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-33-7  | Tungsten as Wolfram insoluble compounds              | 5.49x10 <sup>4</sup>  | 7.62x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-62-2  | Vanadium (fume or dust)                              | 4.36x10 <sup>4</sup>  | 6.05x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha           | 5.50x10 <sup>-1</sup> | 7.64x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7440-66-6  | Zinc   | 1.93x10 <sup>1</sup>  | 2.68x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1314-13-2  | Zinc oxide   | 2.28x10 <sup>2</sup>  | 3.17x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 67-64-1    | Acetone <sup>a</sup>                                 | 9.36x10 <sup>5</sup>  | 1.30x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 893             | 7726-95-6  | Bromine <sup>a</sup>                                 | 3.11x10 <sup>2</sup>  | 4.32x10 <sup>-5</sup> | 6.60                      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) <sup>a</sup> | 2.60x10 <sup>4</sup>  | 3.61x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 893             | 67-63-0    | Isopropyl alcohol <sup>a</sup>                       | 3.54x10 <sup>5</sup>  | 4.92x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 893             | 7697-37-2  | Nitric acid <sup>a</sup>                             | 2.71x10 <sup>4</sup>  | 3.77x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEI/100 µg/m <sub>3</sub> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 893             | 1310-58-3  | Potassium hydroxide <sup>a</sup>                        | 4.09x10 <sup>3</sup> | 5.67x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-93-9  | Sulfuric acid <sup>a</sup>                              | 1.41x10 <sup>5</sup> | 1.96x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha <sup>a</sup> | 4.80x10 <sup>3</sup> | 6.67x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| MESA            | 107-98-2   | 1-Methoxy-2-propanol <sup>b</sup>                       | 1.09x10 <sup>2</sup> | 1.51x10 <sup>-5</sup> | 3.75x10 <sup>3</sup>      | 4.43                  | FALSE  |
| MESA            | 872-50-4   | 1-Methyl-2-pyrrolidinone <sup>b</sup>                   | 8.21x10 <sup>3</sup> | 1.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE  |
| MESA            | 111-15-9   | 2-Ethoxyethyl acetate <sup>b</sup>                      | 1.91x10 <sup>3</sup> | 2.65x10 <sup>-4</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| MESA            | 64-19-7    | Acetic acid <sup>b</sup>                                | 1.06x10 <sup>3</sup> | 1.47x10 <sup>-4</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| MESA            | 67-64-1    | Acetone <sup>b</sup>                                    | 7.49x10 <sup>5</sup> | 1.04x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| MESA            | 21645-51-2 | Aluminum hydroxide <sup>b</sup>                         | 5.00x10 <sup>2</sup> | 6.95x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| MESA            | 1344-28-1  | Aluminum oxide anhydrous <sup>b</sup>                   | 4.99x10 <sup>1</sup> | 6.93x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| MESA            | 7664-41-7  | Ammonia <sup>b</sup>                                    | 4.54x10 <sup>4</sup> | 6.30x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| MESA            | 7664-41-7  | Ammonia anhydrous <sup>b</sup>                          | 1.92x10 <sup>6</sup> | 2.67x10 <sup>-1</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | TRUE   |
| MESA            | 7784-42-1  | Arsine <sup>b</sup>                                     | 1.34x10 <sup>5</sup> | 1.86x10 <sup>-2</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| MESA            | 7637-07-2  | Boron trifluoride <sup>b</sup>                          | 3.49x10 <sup>1</sup> | 4.85x10 <sup>-6</sup> | 3.00x10 <sup>1</sup>      | 3.54x10 <sup>-2</sup> | FALSE  |
| MESA            | 7726-95-6  | Bromine <sup>b</sup>                                    | 1.53x10 <sup>2</sup> | 2.13x10 <sup>-5</sup> | 6.60                      | 7.79x10 <sup>-3</sup> | FALSE  |
| MESA            | 110-82-7   | Cyclohexane <sup>b</sup>                                | 9.42x10 <sup>1</sup> | 1.31x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| MESA            | 34590-94-8 | Dipropylene glycol methyl ether <sup>b</sup>            | 1.45x10 <sup>2</sup> | 2.02x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| MESA            | 64-17-5    | Ethanol <sup>b</sup>                                    | 2.83x10 <sup>3</sup> | 3.92x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE  |
| MESA            | 78-10-4    | Ethyl silicate <sup>b</sup>                             | 3.72x10 <sup>3</sup> | 5.17x10 <sup>-4</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| MESA            | 56-81-5    | Glycerin <sup>b</sup>                                   | 6.30x10 <sup>2</sup> | 8.75x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| MESA            | 7722-84-1  | Hydrogen peroxide <sup>b</sup>                          | 2.73x10 <sup>4</sup> | 3.79x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| MESA            | 67-63-1    | Isopropyl alcohol <sup>b</sup>                          | 3.31x10 <sup>5</sup> | 4.59x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER  | CHEMICAL                             | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|-------------|--------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| MESA            | 8030-30-6   | Naphtha <sup>b</sup>                 | 3.88x10 <sup>3</sup> | 5.39x10 <sup>-4</sup> | 4.00x10 <sup>3</sup>      | 4.72                  | FALSE  |
| MESA            | 123-86-4    | N-Butyl acetate <sup>b</sup>         | 2.01x10 <sup>2</sup> | 2.79x10 <sup>-5</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE  |
| MESA            | 7697-37-2   | Nitric acid <sup>b</sup>             | 4.41x10 <sup>4</sup> | 6.12x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| MESA            | 10024-97-2  | Nitrous oxide <sup>b</sup>           | 9.53x10 <sup>3</sup> | 1.32x10 <sup>-3</sup> | 4.60x10 <sup>2</sup>      | 5.43x10 <sup>-1</sup> | FALSE  |
| MESA            | 71-23-8     | N-Propyl alcohol <sup>b</sup>        | 4.02x10 <sup>2</sup> | 5.59x10 <sup>-5</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| MESA            | 7664-38-2   | Phosphoric acid <sup>b</sup>         | 2.14x10 <sup>3</sup> | 2.98x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| MESA            | 1310-58-3   | Potassium hydroxide <sup>b</sup>     | 1.02x10 <sup>4</sup> | 1.42x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| MESA            | 112926-00-8 | Precipitated silica gel <sup>b</sup> | 2.50x10 <sup>3</sup> | 3.47x10 <sup>-4</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| MESA            | 7803-62-5   | Silane <sup>b</sup>                  | 5.63x10 <sup>3</sup> | 7.81x10 <sup>-4</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-2</sup> | FALSE  |
| MESA            | 9005-25-8   | Starch <sup>b,c</sup>                | 5.68                 | 7.89x10 <sup>-7</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| MESA            | 2551-62-4   | Sulfur hexafluoride <sup>b</sup>     | 2.40x10 <sup>5</sup> | 3.33x10 <sup>-2</sup> | 5.79x10 <sup>4</sup>      | 6.84x10 <sup>1</sup>  | FALSE  |
| MESA            | 7664-93-9   | Sulfuric acid <sup>b</sup>           | 1.56x10 <sup>5</sup> | 2.17x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 897             | 64-19-7     | Acetic acid                          | 4.95x10 <sup>4</sup> | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 897             | 67-64-1     | Acetone                              | 6.84x10 <sup>4</sup> | 9.51x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 897             | 106-92-3    | Allyl glycidyl ether                 | 1.67x10 <sup>1</sup> | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE  |
| 897             | 1344-28-1   | Aluminum oxide (fibrous forms)       | 1.50x10 <sup>3</sup> | 2.08x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 128-37-0    | Butylated hydroxytoluene             | 9.90x10 <sup>1</sup> | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 420-04-2    | Cyanamide                            | 2.47x10 <sup>1</sup> | 3.44x10 <sup>-6</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 110-82-7    | Cyclohexane                          | 2.99                 | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 897             | 107-66-4    | Dibutyl phosphate                    | 2.72x10 <sup>2</sup> | 3.78x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 124-40-3    | Dimethylamine                        | 3.98x10 <sup>2</sup> | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 897             | 141-78-6    | Ethyl acetate                        | 1.78x10 <sup>4</sup> | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEI/100 µg/m <sub>3</sub> | TEV g/sec             | RESULT |
|-----------------|------------|---|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 60-29-7    | Ethyl ether (diethyl ether)             | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE  |
| 897             | 78-10-4    | Ethyl silicate                          | 6.27x10 <sup>2</sup>  | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 2.36x10 <sup>3</sup>  | 3.28x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 897             | 67-63-0    | Isopropyl alcohol                       | 7.77x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 897             | 8008-20-6  | Kerosene                                | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE  |
| 897             | 126-98-7   | Methacrylonitrile                       | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 897             | 681-84-5   | Methyl silicate                         | 2.24x10 <sup>2</sup>  | 3.12x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 897             | 71-36-3    | n-Butyl alcohol                         | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 897             | 142-82-5   | n-Heptane                               | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 7697-37-2  | Nitric acid                             | 1.60x10 <sup>1</sup>  | 2.22x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 144-62-7   | Oxalic acid                             | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-66-0   | Pentane                                 | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 9003-53-6  | Phenylethylenne (styrene, monomer)      | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 88-89-1    | Picric acid (2,4,6-trinitrophenol)      | 9.95                  | 1.38x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 897             | 1310-58-3  | Potassium hydroxide                     | 9.30x10 <sup>3</sup>  | 1.29x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 71-23-8    | Propyl alcohol                          | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 897             | 7440-22-4  | Silver metal                            | 1.68x10 <sup>1</sup>  | 2.33x10 <sup>-6</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | FALSE  |
| 897             | 1310-73-2  | Sodium hydroxide                        | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-93-9  | Sulfuric acid                           | 7.75x10 <sup>3</sup>  | 1.08x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-99-9   | Tetrahydrofuran                         | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 897             | 7719-09-7  | Thionyl chloride                        | 4.89x10 <sup>3</sup>  | 6.80x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 897             | 76-03-9    | Trichloroacetic acid                    | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 905             | 67-64-1    | Acetone                                 | 2.81x10 <sup>4</sup>  | 3.90x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |

**Table D.1–10. Projected Toxic Air Pollutant (TAP) Emissions  
Expanded Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEI/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 905             | 67-63-0    | Isopropyl alcohol | 2.47x10 <sup>4</sup> | 3.44x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 905             | 1309-48-4  | Magnesium oxide   | 1.60x10 <sup>3</sup> | 2.22x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 905             | 109-99-9   | Tetrahydrofuran-  | 6.69x10 <sup>3</sup> | 9.29x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 963             | 67-63-0    | Isopropyl alcohol | 1.57x10 <sup>3</sup> | 2.18x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 981             | 67-64-1    | Acetone           | 2.30x10 <sup>4</sup> | 3.20x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 981             | 7664-93-9  | Sulfuric acid     | 3.61x10 <sup>5</sup> | 5.02x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 986             | 67-64-1    | Acetone           | 2.21x10 <sup>4</sup> | 3.07x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA is Complex configuration is implemented, Building 893 would cease operations and the chemicals listed would no longer contribute TAP emissions under the Expanded Operations Alternative.

<sup>b</sup> If Building 893 is not replaced by the MESA Complex configuration, the chemicals listed would not contribute to TAP emissions under the Expanded Operations Alternative.

<sup>c</sup> Starch was included for completeness because the chemical was listed in the inventory.

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions Reduced Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                               | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 605             | 79-09-4    | Propionic acid                         | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE  |
| 605             | 7664-93-9  | Sulfuric acid                          | 8.25x10 <sup>1</sup> | 1.15x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6580            | 141-78-6   | Ethyl acetate                          | 9.00x10 <sup>2</sup> | 1.25x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 6580            | 7722-84-1  | Hydrogen peroxide (concentration> 52%) | 1.66x10 <sup>2</sup> | 2.31x10 <sup>-5</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 6580            | 7697-37-2  | Nitric acid                            | 5.25x10 <sup>3</sup> | 7.29x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6580            | 1310-73-2  | Sodium hydroxide                       | 5.65x10 <sup>3</sup> | 7.85x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6580            | 7664-93-9  | Sulfuric acid                          | 2.76x10 <sup>3</sup> | 3.83x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 6920            | 7697-37-2  | Nitric acid                            | 1.87x10 <sup>2</sup> | 2.60x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 6920            | 1310-73-2  | Sodium hydroxide                       | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 6920            | 7440-66-6  | Zinc                                   | 1.00x10 <sup>3</sup> | 1.39x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 858             | 64-19-7    | Acetic acid                            | 2.16x10 <sup>4</sup> | 3.00x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 858             | 67-64-1    | Acetone                                | 1.16x10 <sup>4</sup> | 1.62x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration> 52%) | 1.19x10 <sup>6</sup> | 1.65x10 <sup>-1</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | TRUE   |
| 858             | 7697-37-2  | Nitric acid                            | 1.53x10 <sup>6</sup> | 2.12x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-38-2  | Phosphoric acid                        | 2.91x10 <sup>4</sup> | 4.04x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 858             | 7803-62-5  | Silane (silicon tetrahydride)          | 6.81x10 <sup>4</sup> | 9.45x10 <sup>-3</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-2</sup> | FALSE  |
| 858             | 1310-73-2  | Sodium hydroxide                       | 2.34x10 <sup>7</sup> | 3.25                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | TRUE   |
| 858             | 7664-93-9  | Sulfuric acid                          | 2.21x10 <sup>4</sup> | 3.07x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid                            | 1.05x10 <sup>5</sup> | 1.45x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 64-19-7    | Acetic Acid, Glacial                   | 1.15x10 <sup>5</sup> | 1.60x10 <sup>-2</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 870             | 67-64-1    | Acetone                                | 6.46x10 <sup>6</sup> | 8.97x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 870             | 71-36-3    | Alcohol, Butyl                         | 1.21x10 <sup>4</sup> | 1.69x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 870             | 67-63-0    | Alcohol, Isopropyl                     | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7429-90-5  | Aluminum  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 870             | 1344-28-1  | Aluminum Oxide  | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 1336-21-6  | Ammonium Hydroxide                                      | 1.35x10 <sup>4</sup> | 1.87x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1113-50-1  | Boric Acid  | 1.20x10 <sup>5</sup> | 1.66x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 11-15-9    | Cellulosolve Acetate                                    | 6.52x10 <sup>3</sup> | 9.05x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ceric Ammonium Nitrate                                  | 2.00x10 <sup>6</sup> | 2.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Citridet Cleaner  | 1.15x10 <sup>6</sup> | 1.59x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 7440-50-8  | Copper  | 6.65x10 <sup>5</sup> | 9.23x10 <sup>-2</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 870             | 7440-50-8  | Copper (0.10%)  | 5.99x10 <sup>1</sup> | 8.32x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             |            | Carboxyl terminated acrylonitrile-butadiene Epoxy Resin | 2.99x10 <sup>5</sup> | 4.16x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Curing Agent Z (37% Methylene dianiline)                | 4.53x10 <sup>5</sup> | 6.29x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | 2,6-diethylaniline curing agent                         | 3.59x10 <sup>5</sup> | 4.99x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Diala oil   | 5.01x10 <sup>5</sup> | 6.95x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             | 106-42-3   | Di-p Xylene   | 9.07x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.35x10 <sup>3</sup>      | 5.12                  | FALSE  |
| 870             | 7440-52-0  | Erbium  | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             |            | Fluorinert  | 5.60x10 <sup>6</sup> | 7.77x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             |            | Glass microballoons filler                              | 7.48x10 <sup>4</sup> | 1.04x10 <sup>-2</sup> | No OEL                    |                       |        |
| 870             |            | Hexylene glycol   | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | 1.21x10 <sup>3</sup>      | 1.43                  | FALSE  |
| 870             | 1309-37-1  | Iron (53%)  | 3.17x10 <sup>4</sup> | 4.41x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 123-92-2   | Iso Amyl Acetate  | 7.94x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | 5.25x10 <sup>3</sup>      | 6.20                  | FALSE  |
| 870             |            | Isopropyl alcohol                                       | 2.61x10 <sup>5</sup> | 3.63x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 870             |            | Mold Release  | 2.81x10 <sup>5</sup> | 3.90x10 <sup>-2</sup> | No OEL                    |                       |        |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 870             | 7439-98-7  | Molybdenum                                | 6.66x10 <sup>3</sup> | 9.24x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7697-37-2  | Nitric Acid (70%)                         | 1.60x10 <sup>5</sup> | 2.22x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             |            | Oakite Citridet                           | 1.00x10 <sup>6</sup> | 1.39x10 <sup>-1</sup> | No OEL                    |                       |        |
| 870             | 127-18-4   | Perchloroethylene                         | 1.01x10 <sup>6</sup> | 1.41x10 <sup>-1</sup> | 1.70x10 <sup>3</sup>      | 2.01                  | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                           | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 1310-58-3  | Potassium Hydroxide                       | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-20-2  | Scandium                                  | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 7631-86-9  | Silica                                    | 9.04x10 <sup>5</sup> | 1.26x10 <sup>-1</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | TRUE   |
| 870             |            | Silver Epoxy                              | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | No OEL                    |                       |        |
| 870             | 1310-73-2  | Sodium Hydroxide                          | 1.50x10 <sup>4</sup> | 2.08x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                             | 1.10x10 <sup>5</sup> | 1.53x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | TRUE   |
| 870             | 7704-98-5  | Titanium Hydride                          | 3.29x10 <sup>3</sup> | 4.57x10 <sup>-4</sup> | No OEL                    |                       |        |
| 870             |            | Ultima Gold – Packard (alkyl/naphthalene) | 1.58x10 <sup>6</sup> | 2.20x10 <sup>-1</sup> | No OEL                    |                       |        |
| 878             | 110-80-5   | 2-Ethoxyethanol                           | 1.24x10 <sup>2</sup> | 1.73x10 <sup>-5</sup> | 1.80x10 <sup>1</sup>      | 2.13x10 <sup>-2</sup> | FALSE  |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                     | 8.53x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 878             | 109-86-4   | 2-Methoxyethanol                          | 8.75x10 <sup>1</sup> | 1.22x10 <sup>-5</sup> | 3.00                      | 3.54x10 <sup>-3</sup> | FALSE  |
| 878             | 64-19-7    | Acetic acid                               | 1.28x10 <sup>4</sup> | 1.77x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 878             | 67-64-1    | Acetone                                   | 3.92x10 <sup>5</sup> | 5.44x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 878             | 7429-90-5  | Aluminum (fume or dust)                   | 1.07x10 <sup>4</sup> | 1.48x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)            | 1.67x10 <sup>6</sup> | 2.31x10 <sup>-1</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | TRUE   |
| 878             | 12125-02-9 | Ammonium chloride                         | 9.99x10 <sup>4</sup> | 1.39x10 <sup>-2</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 1303-96-4  | Borates, tetra, sodium salts (anhydrous)  | 1.00x10 <sup>4</sup> | 1.39x10 <sup>3</sup>  | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>2</sup>  | FALSE  |
| 878             | 111-76-2   | Butyl cellosolve (R)                      | 5.97x10 <sup>3</sup> | 8.29x10 <sup>-4</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE  |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 1305-62-0  | Calcium hydroxide                                   | 1.12x10 <sup>4</sup> | 1.56x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 76-22-2    | Camphor   | 7.44x10 <sup>1</sup> | 1.03x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 1333-86-4  | Carbon black  | 4.46x10 <sup>2</sup> | 6.19x10 <sup>-5</sup> | 3.50x10 <sup>1</sup>      | 4.13x10 <sup>-2</sup> | FALSE  |
| 878             | 2921-88-2  | Chlorpyrifos  | 2.27                 | 3.15x10 <sup>-7</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 878             | 7440-50-8  | Copper dusts and mists, as copper                   | 7.60x10 <sup>4</sup> | 1.06x10 <sup>-2</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 110-82-7   | Cyclohexane   | 3.40x10 <sup>2</sup> | 4.73x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 878             | 108-93-0   | Cyclohexanol  | 8.00                 | 1.11x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE  |
| 878             | 108-91-8   | Cyclohexylamine                                     | 1.83x10 <sup>4</sup> | 2.54x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE  |
| 878             | 111-40-0   | Diethylene triamine                                 | 2.07x10 <sup>3</sup> | 2.87x10 <sup>-4</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 878             | 109-87-5   | Dimethoxymethane (methylal)                         | 3.40                 | 4.72x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE  |
| 878             | 141-43-5   | Ethanolamine  | 1.53x10 <sup>2</sup> | 2.12x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 141-78-6   | Ethyl acetate                                       | 4.88x10 <sup>2</sup> | 6.77x10 <sup>-5</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 878             | 78-10-4    | Ethyl silicate                                      | 4.79x10 <sup>2</sup> | 6.65x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 64-18-6    | Formic acid   | 5.68x10 <sup>3</sup> | 7.89x10 <sup>-4</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>1</sup>  | FALSE  |
| 878             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)             | 2.94x10 <sup>4</sup> | 4.08x10 <sup>-3</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 878             | 7783-06-4  | Hydrogen sulfide                                    | 3.66x10 <sup>3</sup> | 5.08x10 <sup>-4</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 878             | 61788-32-7 | Hydrogenated terphenyls                             | 3.18x10 <sup>3</sup> | 4.42x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-74-6  | Indium & compounds as indium                        | 8.80x10 <sup>3</sup> | 1.22x10 <sup>-3</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | TRUE   |
| 878             | 7553-56-2  | Iodine  | 7.00x10 <sup>2</sup> | 9.72x10 <sup>-5</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1309-37-1  | Iron oxide fume ( $\text{Fe}_2\text{O}_3$ ) as iron | 1.03x10 <sup>4</sup> | 1.43x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7439-89-6  | Iron salts, soluble, as iron                        | 8.03x10 <sup>3</sup> | 1.12x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 26952-21-6 | Isoacetyl alcohol                                   | 6.80                 | 9.45x10 <sup>-7</sup> | 2.66x10 <sup>3</sup>      | 3.14                  | FALSE  |
| 878             | 110-19-0   | Isobutyl acetate                                    | 5.10x10 <sup>1</sup> | 7.08x10 <sup>-6</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                       | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 4098-71-9  | Isophorone diisocyanate                        | 1.00                  | 1.39x10 <sup>-7</sup> | 4.50x10 <sup>-1</sup>     | 5.31x10 <sup>-4</sup> | FALSE  |
| 878             | 67-63-0    | Isopropyl alcohol                              | 2.21x10 <sup>5</sup>  | 3.07x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 878             | 1309-48-4  | Magnesium oxide                                | 1.18x10 <sup>3</sup>  | 1.63x10 <sup>-4</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 878             | 5124-30-1  | Methylene bis(4-cyclohexylisocyanate)          | 1.66x10 <sup>2</sup>  | 2.31x10 <sup>-5</sup> | 5.40x10 <sup>1</sup>      | 6.38x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-98-7  | Molybdenum as molybdenum (insoluble compounds) | 1.57x10 <sup>4</sup>  | 2.18x10 <sup>-3</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 878             | 628-63-7   | n-Amyl acetate                                 | 4.38x10 <sup>2</sup>  | 6.08x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE  |
| 878             | 123-86-4   | n-Butyl acetate                                | 1.36x10 <sup>3</sup>  | 1.89x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE  |
| 878             | 71-36-3    | n-Butyl alcohol                                | 6.74x10 <sup>3</sup>  | 9.36x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)                   | 2.72x10 <sup>2</sup>  | 3.78x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE  |
| 878             | 142-82-5   | n-Heptane                                      | 6.03x10 <sup>2</sup>  | 8.37x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7697-37-2  | Nitric acid                                    | 6.33x10 <sup>4</sup>  | 8.79x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-66-0   | Pentane  | 3.25x10 <sup>2</sup>  | 4.51x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 8002-05-9  | Petroleum                                      | 4.53x10 <sup>2</sup>  | 6.30x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 9003-53-6  | Phenylethylenne (styrene, monomer)             | 1.05x10 <sup>2</sup>  | 1.46x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 878             | 7664-38-2  | Phosphoric acid                                | 6.69x10 <sup>3</sup>  | 9.30x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-06-4  | Platinum metal                                 | 1.02x10 <sup>4</sup>  | 1.41x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-58-3  | Potassium hydroxide                            | 2.90x10 <sup>3</sup>  | 4.03x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 71-23-8    | Propyl alcohol                                 | 4.06x10 <sup>3</sup>  | 5.63x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 878             | 8003-34-7  | Pyrethrins                                     | 2.36x10 <sup>-1</sup> | 3.28x10 <sup>-8</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 110-86-1   | Pyridine                                       | 1.94x10 <sup>2</sup>  | 2.69x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE  |
| 878             | 14808-60-7 | Quartz   | 4.02x10 <sup>3</sup>  | 5.59x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 78-92-2    | sec-Butyl alcohol                              | 1.34x10 <sup>3</sup>  | 1.86x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 878             | 7631-86-9  | Silica, fused (respirable)                 | 6.46x10 <sup>3</sup>  | 8.97x10 <sup>-4</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 7440-22-4  | Silver metal                               | 1.40x10 <sup>4</sup>  | 1.95x10 <sup>-3</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | TRUE   |
| 878             | 7631-90-5  | Sodium bisulfite                           | 5.00x10 <sup>2</sup>  | 6.94x10 <sup>-5</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1310-73-2  | Sodium hydroxide                           | 4.87x10 <sup>2</sup>  | 6.77x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 8052-41-3  | Stoddard solvent                           | 2.27x10 <sup>2</sup>  | 3.15x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7664-93-9  | Sulfuric acid                              | 2.18x10 <sup>2</sup>  | 3.02x10 <sup>-5</sup> | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 75-65-0    | t-Butyl alcohol                            | 3.40                  | 4.72x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 878             | 7440-25-7  | Tantalum                                   | 1.04x10 <sup>3</sup>  | 1.44x10 <sup>-4</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 26140-60-3 | Terphenyls                                 | 4.77x10 <sup>2</sup>  | 6.62x10 <sup>-5</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 109-99-9   | Tetrahydrofuran                            | 4.23x10 <sup>2</sup>  | 5.87x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 878             | 7722-88-5  | Tetrasodium pyrophosphate                  | 1.50                  | 2.08x10 <sup>-7</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-31-5  | Tin metal                                  | 1.37x10 <sup>4</sup>  | 1.91x10 <sup>-3</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-2</sup> | FALSE  |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate                   | 2.04x10 <sup>1</sup>  | 2.83x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-33-7  | Tungsten as Wolfram insoluble compounds    | 2.74x10 <sup>4</sup>  | 3.81x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-62-2  | Vanadium (fume or dust)                    | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | TRUE   |
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.75x10 <sup>-1</sup> | 3.82x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 878             | 7440-66-6  | Zinc                                       | 9.64                  | 1.34x10 <sup>-6</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1314-13-2  | Zinc oxide                                 | 1.14x10 <sup>2</sup>  | 1.58x10 <sup>-5</sup> | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 67-64-1    | Acetone                                    | 4.68x10 <sup>5</sup>  | 6.50x10 <sup>-2</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 893             | 7726-95-6  | Bromine                                    | 1.55x10 <sup>2</sup>  | 2.16x10 <sup>-5</sup> | 6.60                      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)    | 1.30x10 <sup>4</sup>  | 1.80x10 <sup>-3</sup> | 1.40x10 <sup>-1</sup>     | 1.65x10 <sup>-2</sup> | FALSE  |
| 893             | 67-63-0    | Isopropyl alcohol                          | 1.77x10 <sup>5</sup>  | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 893             | 7697-37-2  | Nitric acid                                | 1.36x10 <sup>4</sup>  | 1.89x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–11. Projected Toxic Air Pollutant (TAP) Emissions  
Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 893             | 1310-58-3  | Potassium hydroxide                        | 2.04x10 <sup>3</sup> | 2.84x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-93-9  | Sulfuric acid                              | 7.07x10 <sup>4</sup> | 9.82x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.40x10 <sup>3</sup> | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 64-19-7    | Acetic acid                                | 4.56x10 <sup>4</sup> | 6.33x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE  |
| 897             | 67-64-1    | Acetone                                    | 6.30x10 <sup>4</sup> | 8.75x10 <sup>-3</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 897             | 106-92-3   | Allyl glycidyl ether                       | 1.54x10 <sup>1</sup> | 2.13x10 <sup>6</sup>  | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE  |
| 897             | 1344-28-1  | Aluminum oxide (fibrous forms)             | 1.38x10 <sup>3</sup> | 1.92x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 128-37-0   | Butylated hydroxytoluene                   | 9.11x10 <sup>1</sup> | 1.26x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE  |
| 897             | 420-04-2   | Cyanamide                                  | 2.28x10 <sup>1</sup> | 3.16x10 <sup>-6</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 110-82-7   | Cyclohexane                                | 2.75                 | 3.82x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE  |
| 897             | 107-66-4   | Dibutyl phosphate                          | 2.50x10 <sup>2</sup> | 3.48x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 897             | 124-40-3   | Dimethylamine                              | 3.66x10 <sup>2</sup> | 5.09x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 897             | 141-78-6   | Ethyl acetate                              | 1.64x10 <sup>4</sup> | 2.28x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE  |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                | 2.01x10 <sup>4</sup> | 2.79x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE  |
| 897             | 78-10-4    | Ethyl silicate                             | 5.77x10 <sup>2</sup> | 8.02x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 7722-84-1  | Hydrogen peroxide (concentration > 52%)    | 2.17x10 <sup>3</sup> | 3.02x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 897             | 67-63-0    | Isopropyl alcohol                          | 7.15x10 <sup>4</sup> | 9.93x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 897             | 8008-20-6  | Kerosene                                   | 2.77x10 <sup>3</sup> | 3.85x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE  |
| 897             | 126-98-7   | Methacrylonitrile                          | 7.31x10 <sup>1</sup> | 1.02x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE  |
| 897             | 681-84-5   | Methyl silicate                            | 2.06x10 <sup>2</sup> | 2.87x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 897             | 71-36-3    | n-Butyl alcohol                            | 1.45x10 <sup>2</sup> | 2.01x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE  |
| 897             | 142-82-5   | n-Heptane                                  | 4.98x10 <sup>3</sup> | 6.92x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 7697-37-2  | Nitric acid                                | 1.47x10 <sup>1</sup> | 2.04x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1-11. Projected Toxic Air Pollutant (TAP) Emissions Reduced Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                           | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|------------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
| 897             | 144-62-7   | Oxalic acid                        | 3.61x10 <sup>3</sup>  | 5.01x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 897             | 109-66-0   | Pentane                            | 1.76x10 <sup>3</sup>  | 2.44x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE  |
| 897             | 9003-53-6  | Phenylethylene (styrene, monomer)  | 7.36x10 <sup>-1</sup> | 1.02x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE  |
| 897             | 88-89-1    | Picric acid (2,4,6-trinitrophenol) | 9.15                  | 1.27x10 <sup>-6</sup> | 1.00                      | 1.18x10 <sup>3</sup>  | FALSE  |
| 897             | 1310-58-3  | Potassium hydroxide                | 8.55x10 <sup>3</sup>  | 1.19x10 <sup>-3</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 71-23-8    | Propyl alcohol                     | 2.74x10 <sup>4</sup>  | 3.81x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE  |
| 897             | 7440-22-4  | Silver metal                       | 1.55x10 <sup>1</sup>  | 2.15x10 <sup>-6</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-4</sup> | FALSE  |
| 897             | 1310-73-2  | Sodium hydroxide                   | 4.60x10 <sup>2</sup>  | 6.39x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 897             | 7664-93-9  | Sulfuric acid                      | 7.13x10 <sup>3</sup>  | 9.90x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>2</sup>  | FALSE  |
| 897             | 109-99-9   | Tetrahydrofuran                    | 1.07x10 <sup>4</sup>  | 1.49x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 897             | 7719-09-7  | Thionyl chloride                   | 4.50x10 <sup>3</sup>  | 6.25x10 <sup>-4</sup> | 4.90x10 <sup>1</sup>      | 5.79x10 <sup>-2</sup> | FALSE  |
| 897             | 76-03-9    | Trichloroacetic acid               | 4.60x10 <sup>2</sup>  | 6.39x10 <sup>-5</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 905             | 67-64-1    | Acetone                            | 2.81x10 <sup>3</sup>  | 3.90x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 905             | 67-63-0    | Isopropyl alcohol                  | 2.47x10 <sup>3</sup>  | 3.44x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 905             | 1309-48-4  | Magnesium oxide                    | 1.60x10 <sup>2</sup>  | 2.22x10 <sup>-5</sup> | 6.00x10 <sup>1</sup>      | 7.08x10 <sup>-2</sup> | FALSE  |
| 905             | 109-99-9   | Tetrahydrofuran                    | 6.69x10 <sup>2</sup>  | 9.29x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 963             | 67-63-0    | Isopropyl alcohol                  | 1.57x10 <sup>2</sup>  | 2.18x10 <sup>-5</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE  |
| 981             | 67-64-1    | Acetone                            | 2.09x10 <sup>3</sup>  | 2.91x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |
| 981             | 7664-93-9  | Sulfuric acid                      | 3.28x10 <sup>4</sup>  | 4.56x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 986             | 67-64-1    | Acetone                            | 1.50x10 <sup>3</sup>  | 2.08x10 <sup>-4</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE  |

**Table D.1–12. 1996 Annual Purchases of Volatile Organic Compounds (VOCs)  
Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                              | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|---------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 605             | 64-17-5    | Ethanol                               | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 605             | 79-09-4    | Propionic acid                        | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>1</sup>  | FALSE   |
| 6580            | 64-17-5    | Ethanol                               | 2.97x10 <sup>1</sup> | 4.12x10 <sup>-6</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 6580            | 141-78-6   | Ethyl acetate                         | 3.60x10 <sup>3</sup> | 5.00x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 858             | 64-19-7    | Acetic acid                           | 3.22x10 <sup>4</sup> | 4.48x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>1</sup>  | FALSE   |
| 858             | 107-83-5   | Isohexanes                            | 1.40x10 <sup>3</sup> | 1.94x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 858             | 108-65-6   | Methoxy acetate                       | 5.94x10 <sup>4</sup> | 8.25x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 870             | 872-50-4   | 1-Methyl-2-Pyrrolidinone              | 4.99x10 <sup>3</sup> | 6.93x10 <sup>-4</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 870             | 100-51-6   | Alcohol, Benzyl                       | 2.63x10 <sup>5</sup> | 3.65x10 <sup>-2</sup> | No OEL                    |                       |         |
| 870             | 64-17-5    | Alcohol, Ethyl                        | 1.03x10 <sup>7</sup> | 1.43                  | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 110-71-4   | 1,2-Dimethoxyethane                   | 7.18x10 <sup>2</sup> | 9.97x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 142-96-1   | 1-Butoxybutane, butyl ether           | 6.53x10 <sup>2</sup> | 9.07x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 90-72-2    | 2,4,6-Tri(dimethylaminomethyl) phenol | 2.69x10 <sup>3</sup> | 3.74x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 112-34-5   | 2-Butyl oxyethanol dipropylene glycol | 3.94x10 <sup>4</sup> | 5.47x10 <sup>-3</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                 | 8.53x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 878             | 64-19-7    | Acetic acid                           | 1.28x10 <sup>4</sup> | 1.77x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>1</sup>  | FALSE   |
| 878             | 64742-89-8 | Aliphatic petroleum distillates       | 4.52x10 <sup>3</sup> | 6.27x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 100-51-6   | Benzyl alcohol                        | 1.25x10 <sup>4</sup> | 1.74x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 111-76-2   | Butyl cellosolve (R)                  | 5.97x10 <sup>3</sup> | 8.29x10 <sup>-4</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE   |
| 878             | 76-22-2    | Camphor                               | 7.44x10 <sup>1</sup> | 1.03x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| 878             | 76-12-0    | Chlorofluorocarbon-112                | 1.25x10 <sup>2</sup> | 1.74x10 <sup>-5</sup> | 1.69x10 <sup>4</sup>      | 2.00x10 <sup>1</sup>  | FALSE   |
| 878             | 110-82-7   | Cyclohexane                           | 3.40x10 <sup>2</sup> | 4.73x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |

**Table D.1–12. 1996 Annual Purchases of Volatile Organic Compounds (continued)**  
**Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 108-93-0   | Cyclohexanol                     | 8.00                 | 1.11x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE   |
| 878             | 108-91-8   | Cyclohexylamine                  | 1.83x10 <sup>4</sup> | 2.54x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE   |
| 878             | 124-18-5   | Decane                           | 3.50x10 <sup>2</sup> | 4.86x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 115-10-6   | Dimethyl ether                   | 9.17x10 <sup>2</sup> | 1.27x10 <sup>-4</sup> | 1.91x10 <sup>4</sup>      | 2.26x10 <sup>1</sup>  | FALSE   |
| 878             | 67-68-5    | Dimethylsulfoxide                | 4.40x10 <sup>3</sup> | 6.11x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 109-87-5   | Dimethyloxymethane (methylal)    | 3.40                 | 4.72x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE   |
| 878             | 2807-30-9  | Ektasolve ep                     | 2.27x10 <sup>1</sup> | 3.15x10 <sup>-6</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 64-17-5    | Ethanol                          | 8.84x10 <sup>4</sup> | 1.23x10 <sup>-2</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 141-78-6   | Ethyl acetate                    | 4.88x10 <sup>2</sup> | 6.77x10 <sup>-5</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 878             | 78-10-4    | Ethyl silicate                   | 4.79x10 <sup>2</sup> | 6.65x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 74-85-1    | Ethylene                         | 5.17x10 <sup>4</sup> | 7.18x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 64-18-6    | Formic acid                      | 5.68x10 <sup>3</sup> | 7.89x10 <sup>-4</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>1</sup>  | FALSE   |
| 878             | 75-28-5    | Isobutane                        | 1.71x10 <sup>3</sup> | 2.37x10 <sup>-4</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 110-19-0   | Isobutyl acetate                 | 5.10x10 <sup>1</sup> | 7.08x10 <sup>-6</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 878             | 67-63-0    | Isopropyl alcohol                | 2.21x10 <sup>5</sup> | 3.07x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 878             | 64742-88-7 | Medium aliphatic solvent naphtha | 2.61x10 <sup>2</sup> | 3.62x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 108-65-6   | Methoxy acetate                  | 5.30x10 <sup>2</sup> | 7.37x10 <sup>-5</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 878             | 4253-34-3  | Methyltriacetoxy silane          | 7.26x10 <sup>1</sup> | 1.01x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 1185-55-3  | Methyltrimethoxysilane           | 8.69x10 <sup>1</sup> | 1.21x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 628-63-7   | n-Amyl acetate                   | 4.38x10 <sup>2</sup> | 6.08x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE   |
| 878             | 106-97-8   | n-Butane                         | 1.91x10 <sup>2</sup> | 2.66x10 <sup>-5</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 123-86-4   | n-Butyl acetate                  | 1.36x10 <sup>3</sup> | 1.89x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE   |

**Table D.1–12. 1996 Annual Purchases of Volatile Organic Compounds (VOCs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 71-23-8    | n-Butyl alcohol                   | 6.74x10 <sup>3</sup> | 9.36x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)      | 2.72x10 <sup>2</sup> | 3.78x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE   |
| 878             | 142-82-5   | n-Heptane                         | 6.03x10 <sup>2</sup> | 8.37x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 872-50-4   | N-Methyl-2-pyrrolidone            | 3.70x10 <sup>4</sup> | 5.13x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 878             | 109-66-0   | Pentane                           | 3.25x10 <sup>2</sup> | 4.51x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 8002-05-9  | Petroleum                         | 4.53x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 64742-47-8 | Petroleum distillate              | 1.73x10 <sup>3</sup> | 2.40x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer) | 1.05x10 <sup>2</sup> | 1.46x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 9036-19-5  | Poly(oxy-1,2-ethandiy)            | 5.03                 | 6.99x10 <sup>-7</sup> | No OEL                    |                       |         |
| 878             | 74-98-6    | Propane                           | 2.13x10 <sup>3</sup> | 2.95x10 <sup>-4</sup> | 1.80x10 <sup>4</sup>      | 2.13x10 <sup>1</sup>  | FALSE   |
| 878             | 71-23-8    | Propyl alcohol                    | 4.06x10 <sup>3</sup> | 5.63x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 878             | 57-55-6    | Propylene glycol                  | 3.29x10 <sup>2</sup> | 4.57x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 110-86-1   | Pyridine                          | 1.94x10 <sup>2</sup> | 2.69x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE   |
| 878             | 78-92-2    | sec-Butyl alcohol                 | 1.34x10 <sup>3</sup> | 1.86x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 8052-41-3  | Stoddard solvent                  | 2.27x10 <sup>2</sup> | 3.15x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 75-65-0    | t-Butyl alcohol                   | 3.40                 | 4.72x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 26140-60-3 | Terphenyls                        | 4.77x10 <sup>2</sup> | 6.62x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 878             | 109-99-9   | Tetrahydrofuran                   | 4.23x10 <sup>2</sup> | 5.87x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 878             | 546-68-9   | Titanium isopropoxides            | 7.09x10 <sup>1</sup> | 9.84x10 <sup>-6</sup> | No OEL                    |                       |         |
| 878             | 26471-62-5 | Toluene diisocyanate              | 2.95x10 <sup>3</sup> | 4.10x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate          | 2.04x10 <sup>1</sup> | 2.83x10 <sup>-6</sup> | 7.00x10 <sup>1</sup>      | 8.26x10 <sup>-4</sup> | FALSE   |
| 878             | 102-71-6   | Triethanolamine                   | 2.68x10 <sup>1</sup> | 3.72x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |

**Table D.1–12. 1996 Annual Purchases of Volatile Organic Compounds (VOCs)  
Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.75x10 <sup>-1</sup> | 3.82x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 893             | 67-68-5    | Dimethylsulfoxide                          | 2.20x10 <sup>3</sup>  | 3.06x10 <sup>-4</sup> | No OEL                    |                       |         |
| 893             | 64-17-5    | Ethanol                                    | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 893             | 67-63-0    | Isopropyl alcohol                          | 1.77x10 <sup>5</sup>  | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 893             | 108-65-6   | Methoxy acetate                            | 8.20x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 893             | 872-50-4   | N-Methyl-2-pyrrolidone                     | 8.21x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.40x10 <sup>3</sup>  | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                      | 4.90x10 <sup>1</sup>  | 6.81x10 <sup>-6</sup> | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE   |
| 897             | 64-19-7    | Acetic acid                                | 4.95x10 <sup>4</sup>  | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 897             | 75-36-5    | Acetyl chloride                            | 1.53x10 <sup>3</sup>  | 2.13x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 106-92-3   | Allyl glycidyl ether                       | 1.67x10 <sup>1</sup>  | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE   |
| 897             | 100-51-6   | Benzyl alcohol                             | 5.21x10 <sup>2</sup>  | 7.24x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 128-37-0   | Butylated hydroxytoluene                   | 9.90x10 <sup>1</sup>  | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE   |
| 897             | 110-82-7   | Cyclohexane                                | 2.99                  | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 897             | 124-40-3   | Dimethylamine                              | 3.98x10 <sup>2</sup>  | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE   |
| 897             | 67-68-5    | Dimethylsulfoxide                          | 1.12x10 <sup>3</sup>  | 1.56x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 64-17-5    | Ethanol                                    | 8.36x10 <sup>1</sup>  | 1.16x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 897             | 141-78-6   | Ethyl acetate                              | 1.78x10 <sup>4</sup>  | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE   |
| 897             | 78-10-4    | Ethyl silicate                             | 6.27x10 <sup>2</sup>  | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 107-83-5   | Isohexanes                                 | 1.41x10 <sup>4</sup>  | 1.96x10 <sup>-3</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |

**Table D.1–12. 1996 Annual Purchases of Volatile Organic Compounds (VOCs) Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 897             | 67-63-0    | Isopropyl alcohol                 | 7.77x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 897             | 8008-20-6  | Kerosene                          | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 897             | 126-98-7   | Methacrylonitrile                 | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 897             | 55-55-0    | Methyl amino phenol sulphate      | 4.11x10 <sup>2</sup>  | 5.70x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 75-79-6    | Methyltrichlorosilane             | 6.40x10 <sup>2</sup>  | 8.89x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 71-23-8    | n-Butyl alcohol                   | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 897             | 142-82-5   | n-Heptane                         | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 109-66-0   | Pentane                           | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 79-21-0    | Peracetic acid                    | 5.65x10 <sup>1</sup>  | 7.85x10 <sup>-6</sup> | No OEL                    |                       |         |
| 897             | 9003-53-6  | Phenylethylene (styrene, monomer) | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 71-23-8    | Propyl alcohol                    | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 897             | 109-99-9   | Tetrahydrofuran                   | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 897             | 998-30-1   | Triethoxysilane                   | 4.23x10 <sup>2</sup>  | 5.87x10 <sup>-5</sup> | No OEL                    |                       |         |
| 905             | 64-17-5    | Ethanol                           | 5.76x10 <sup>3</sup>  | 8.00x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 905             | 67-63-0    | Isopropyl alcohol                 | 1.24x10 <sup>4</sup>  | 1.72x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 905             | 109-99-9   | Tetrahydrofuran                   | 3.34x10 <sup>3</sup>  | 4.64x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 963             | 67-63-0    | Isopropyl alcohol                 | 7.85x10 <sup>2</sup>  | 1.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

**Table D.1–13. Projected Volatile Organic Compound (VOC) Emissions  
No Action Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                              | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|---------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 605             | 64-17-5    | Ethanol                               | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 605             | 79-09-4    | Propionic acid                        | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE   |
| 6580            | 64-17-5    | Ethanol                               | 2.97x10 <sup>1</sup> | 4.12x10 <sup>-6</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 6580            | 141-78-6   | Ethyl acetate                         | 3.60x10 <sup>3</sup> | 5.00x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 858             | 64-19-7    | Acetic acid                           | 5.64x10 <sup>4</sup> | 7.83x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 858             | 107-83-5   | Isohexanes                            | 2.45x10 <sup>3</sup> | 3.40x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 858             | 108-65-6   | Methoxy acetate                       | 1.04x10 <sup>5</sup> | 1.44x10 <sup>-2</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 870             | 872-50-4   | 1-Methyl-2-Pyrrolidinone              | 1.54x10 <sup>4</sup> | 2.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 870             | 100-51-6   | Alcohol, Benzyl                       | 7.89x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | No OEL                    |                       |         |
| 870             | 64-17-5    | Alcohol, Ethyl                        | 3.08x10 <sup>7</sup> | 4.28                  | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 110-71-4   | 1,2-Dimethoxyethane                   | 1.08x10 <sup>3</sup> | 1.50x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 142-96-1   | 1-Butoxybutane, butyl ether           | 9.80x10 <sup>2</sup> | 1.36x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 90-72-2    | 2,4,6-Tri(dimethylaminomethyl) phenol | 4.04x10 <sup>3</sup> | 5.61x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 112-34-5   | 2-Butyl oxyethanol dipropylene glycol | 5.90x10 <sup>4</sup> | 8.20x10 <sup>-3</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                 | 1.28x10 <sup>4</sup> | 1.78x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 878             | 64-19-7    | Acetic acid                           | 1.92x10 <sup>4</sup> | 2.66x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 878             | 64742-89-8 | Aliphatic petroleum distillates       | 6.78x10 <sup>3</sup> | 9.41x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 100-51-6   | Benzyl alcohol                        | 1.88x10 <sup>4</sup> | 2.60x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 111-76-2   | Butyl cellosolve (R)                  | 8.95x10 <sup>3</sup> | 1.24x10 <sup>-3</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE   |
| 878             | 76-22-2    | Camphor                               | 1.12x10 <sup>2</sup> | 1.55x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| 878             | 76-12-0    | Chlorofluorocarbon-112                | 1.87x10 <sup>2</sup> | 2.60x10 <sup>-5</sup> | 1.69x10 <sup>4</sup>      | 2.00x10 <sup>1</sup>  | FALSE   |
| 878             | 110-82-7   | Cyclohexane                           | 5.11x10 <sup>2</sup> | 7.09x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |

**Table D.1–13. Projected Volatile Organic Compound (VOC) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 108-93-0   | Cyclohexanol                     | 1.20x10 <sup>1</sup> | 1.67x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE   |
| 878             | 108-91-8   | Cyclohexylamine                  | 2.74x10 <sup>4</sup> | 3.81x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE   |
| 878             | 124-18-5   | Decane                           | 5.25x10 <sup>2</sup> | 7.29x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 115-10-6   | Dimethyl ether                   | 1.38x10 <sup>3</sup> | 1.91x10 <sup>-4</sup> | 1.91x10 <sup>4</sup>      | 2.26x10 <sup>1</sup>  | FALSE   |
| 878             | 67-68-5    | Dimethylsulfoxide                | 6.60x10 <sup>3</sup> | 9.17x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 109-87-5   | Dimethyoxymethane (methylal)     | 5.10                 | 7.09x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE   |
| 878             | 2807-30-9  | Ektasolve ep                     | 3.40x10 <sup>1</sup> | 4.72x10 <sup>-6</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 64-17-5    | Ethanol                          | 1.33x10 <sup>5</sup> | 1.84x10 <sup>-2</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 141-78-6   | Ethyl acetate                    | 7.32x10 <sup>2</sup> | 1.02x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 878             | 78-10-4    | Ethyl silicate                   | 7.18x10 <sup>2</sup> | 9.97x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 74-85-1    | Ethylene                         | 7.76x10 <sup>4</sup> | 1.08x10 <sup>-2</sup> | No OEL                    |                       |         |
| 878             | 64-18-6    | Formic acid                      | 8.52x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>-1</sup> | FALSE   |
| 878             | 75-28-5    | Isobutane                        | 2.56x10 <sup>3</sup> | 3.55x10 <sup>-4</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 110-19-0   | Isobutyl acetate                 | 7.64x10 <sup>1</sup> | 1.06x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 878             | 67-63-0    | Isopropyl alcohol                | 3.32x10 <sup>5</sup> | 4.61x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 878             | 64742-88-7 | Medium aliphatic solvent naphtha | 3.91x10 <sup>2</sup> | 5.43x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 108-65-6   | Methoxy acetate                  | 7.96x10 <sup>2</sup> | 1.11x10 <sup>-4</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 878             | 4253-34-3  | Methyltriacetoxy silane          | 1.09x10 <sup>2</sup> | 1.51x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 1185-55-3  | Methyltrimethoxysilane           | 1.30x10 <sup>2</sup> | 1.81x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 628-63-7   | n-Amyl acetate                   | 6.57x10 <sup>2</sup> | 9.12x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE   |
| 878             | 106-97-8   | n-Butane                         | 2.87x10 <sup>2</sup> | 3.99x10 <sup>-5</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 123-86-4   | n-Butyl acetate                  | 2.05x10 <sup>3</sup> | 2.84x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE   |

**Table D.1–13. Projected Volatile Organic Compound (VOC) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 71-23-8    | n-Butyl alcohol                   | 1.01x10 <sup>-4</sup> | 1.40x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)      | 4.08x10 <sup>-2</sup> | 5.67x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE   |
| 878             | 142-82-5   | n-Heptane                         | 9.04x10 <sup>-2</sup> | 1.26x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 872-50-4   | N-Methyl-2-pyrrolidone            | 5.54x10 <sup>-4</sup> | 7.70x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 878             | 109-66-0   | Pentane                           | 4.87x10 <sup>-2</sup> | 6.76x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 8002-05-9  | Petroleum                         | 6.80x10 <sup>-2</sup> | 9.44x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 64742-47-8 | Petroleum distillate              | 2.60x10 <sup>-3</sup> | 3.61x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer) | 1.57x10 <sup>-2</sup> | 2.19x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 9036-19-5  | Poly(oxy-1,2-ethanediyl)          | 7.54                  | 1.05x10 <sup>-6</sup> | No OEL                    |                       |         |
| 878             | 74-98-6    | Propane                           | 3.19x10 <sup>-3</sup> | 4.43x10 <sup>-4</sup> | 1.80x10 <sup>4</sup>      | 2.13x10 <sup>1</sup>  | FALSE   |
| 878             | 71-23-8    | Propyl alcohol                    | 6.08x10 <sup>-3</sup> | 8.45x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 878             | 57-55-6    | Propylene glycol                  | 4.94x10 <sup>-2</sup> | 6.86x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 110-86-1   | Pyridine                          | 2.90x10 <sup>-2</sup> | 4.03x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE   |
| 878             | 78-92-2    | sec-Butyl alcohol                 | 2.01x10 <sup>-3</sup> | 2.79x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 8052-41-3  | Stoddard solvent                  | 3.41x10 <sup>-2</sup> | 4.73x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 75-65-0    | t-Butyl alcohol                   | 5.10                  | 7.09x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 26140-60-3 | Terphenyls                        | 7.15x10 <sup>-2</sup> | 9.94x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 878             | 109-99-9   | Tetrahydrofuran                   | 6.34x10 <sup>-2</sup> | 8.81x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 878             | 546-68-9   | Titanium isopropoxides            | 1.06x10 <sup>-2</sup> | 1.48x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 26471-62-5 | Toluene diisocyanate              | 4.43x10 <sup>-3</sup> | 6.15x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate          | 3.06x10 <sup>-1</sup> | 4.25x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE   |
| 878             | 102-71-6   | Triethanolamine                   | 4.02x10 <sup>-1</sup> | 5.58x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |

**Table D.1–13. Projected Volatile Organic Compound (VOC) Emissions  
No Action Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 4.12x10 <sup>-1</sup> | 5.73x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 893             | 67-68-5    | Dimethylsulfoxide                          | 2.20x10 <sup>3</sup>  | 3.06x10 <sup>-4</sup> | No OEL                    |                       |         |
| 893             | 64-17-5    | Ethanol                                    | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 893             | 67-63-0    | Isopropyl alcohol                          | 1.77x10 <sup>5</sup>  | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 893             | 108-65-6   | Methoxy acetate                            | 8.20x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 893             | 872-50-4   | N-Methyl-2-pyrrolidone                     | 8.21x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.40x10 <sup>3</sup>  | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                      | 4.90x10 <sup>1</sup>  | 6.81x10 <sup>-6</sup> | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE   |
| 897             | 64-19-7    | Acetic acid                                | 4.95x10 <sup>4</sup>  | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 897             | 75-36-5    | Acetyl chloride                            | 1.53x10 <sup>3</sup>  | 2.13x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 106-92-3   | Allyl glycidyl ether                       | 1.67x10 <sup>1</sup>  | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE   |
| 897             | 100-51-6   | Benzyl alcohol                             | 5.21x10 <sup>2</sup>  | 7.24x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 128-37-0   | Butylated hydroxytoluene                   | 9.90x10 <sup>1</sup>  | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE   |
| 897             | 110-82-7   | Cyclohexane                                | 2.99                  | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 897             | 124-40-3   | Dimethylamine                              | 3.98x10 <sup>2</sup>  | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE   |
| 897             | 67-68-5    | Dimethylsulfoxide                          | 1.12x10 <sup>3</sup>  | 1.56x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 64-17-5    | Ethanol                                    | 8.36x10 <sup>1</sup>  | 1.16x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 897             | 141-78-6   | Ethyl acetate                              | 1.78x10 <sup>4</sup>  | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE   |
| 897             | 78-10-4    | Ethyl silicate                             | 6.27x10 <sup>2</sup>  | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 107-83-5   | Isohexanes                                 | 1.41x10 <sup>4</sup>  | 1.96x10 <sup>-3</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 67-63-0    | Isopropyl alcohol                          | 7.77x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

**Table D.1–13. Projected Volatile Organic Compound (VOC) Emissions  
No Action Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 897             | 8008-20-6  | Kerosene                          | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 897             | 126-98-7   | Methacrylonitrile                 | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 897             | 55-55-0    | Methal amino phenol sulphate      | 4.11x10 <sup>2</sup>  | 5.70x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 75-79-6    | Methyltrichlorosilane             | 6.40x10 <sup>2</sup>  | 8.89x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 71-23-8    | n-Butyl alcohol                   | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 897             | 142-82-5   | n-Heptane                         | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 109-66-0   | Pentane                           | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 79-21-0    | Peracetic acid                    | 5.65x10 <sup>1</sup>  | 7.85x10 <sup>-6</sup> | No OEL                    |                       |         |
| 897             | 9003-53-6  | Phenylethylene (styrene, monomer) | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 71-23-8    | Propyl alcohol                    | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 897             | 109-99-9   | Tetrahydrofuran                   | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 897             | 998-30-1   | Triethoxysilane                   | 4.23x10 <sup>2</sup>  | 5.87x10 <sup>-5</sup> | No OEL                    |                       |         |
| 905             | 64-17-5    | Ethanol                           | 1.15x10 <sup>4</sup>  | 1.60x10 <sup>-3</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 905             | 67-63-0    | Isopropyl alcohol                 | 2.47x10 <sup>4</sup>  | 3.44x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 905             | 109-99-9   | Tetrahydrofuran                   | 6.69x10 <sup>3</sup>  | 9.29x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 963             | 67-63-0    | Isopropyl alcohol                 | 7.85x10 <sup>2</sup>  | 1.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

**Table D.1–14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                              | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|---------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| <b>605</b>      | 64-17-5    | Ethanol                               | 9.07x10 <sup>2</sup> | 1.26x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| <b>605</b>      | 79-09-4    | Propionic acid                        | 2.06x10 <sup>2</sup> | 2.87x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>1</sup>  | FALSE   |
| <b>6580</b>     | 64-17-5    | Ethanol                               | 5.94x10 <sup>1</sup> | 8.25x10 <sup>-6</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| <b>6580</b>     | 141-78-6   | Ethyl acetate                         | 7.20x10 <sup>3</sup> | 1.00x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| <b>858</b>      | 64-19-7    | Acetic acid                           | 6.04x10 <sup>4</sup> | 8.39x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>1</sup>  | FALSE   |
| <b>858</b>      | 107-83-5   | Isohexanes                            | 2.62x10 <sup>3</sup> | 3.65x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| <b>858</b>      | 108-65-6   | Methoxy acetate                       | 1.11x10 <sup>5</sup> | 1.55x10 <sup>-2</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| <b>870</b>      | 872-50-4   | 1-Methyl-2-Pyrrolidinone              | 1.54x10 <sup>4</sup> | 2.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>1</sup>  | FALSE   |
| <b>870</b>      | 100-51-6   | Alcohol, Benzyl                       | 7.89x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | No OEL                    |                       |         |
| <b>870</b>      | 64-17-5    | Alcohol, Ethyl                        | 3.08x10 <sup>7</sup> | 4.28                  | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| <b>878</b>      | 110-71-4   | 1,2-Dimethoxyethane                   | 1.44x10 <sup>3</sup> | 1.99x10 <sup>-4</sup> | No OEL                    |                       |         |
| <b>878</b>      | 142-96-1   | 1-Butoxybutane, butyl ether           | 1.31x10 <sup>3</sup> | 1.81x10 <sup>-4</sup> | No OEL                    |                       |         |
| <b>878</b>      | 90-72-2    | 2,4,6-Tri(dimethylaminomethyl) phenol | 5.38x10 <sup>3</sup> | 7.48x10 <sup>-4</sup> | No OEL                    |                       |         |
| <b>878</b>      | 112-34-5   | 2-Butyl oxyethanol dipropylene glycol | 7.87x10 <sup>4</sup> | 1.09x10 <sup>-2</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| <b>878</b>      | 111-15-9   | 2-Ethoxyethyl acetate                 | 1.71x10 <sup>4</sup> | 2.37x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>2</sup>  | FALSE   |
| <b>878</b>      | 64-19-7    | Acetic acid                           | 2.55x10 <sup>4</sup> | 3.55x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>1</sup>  | FALSE   |
| <b>878</b>      | 64742-89-8 | Aliphatic petroleum distillates       | 9.04x10 <sup>3</sup> | 1.25x10 <sup>-3</sup> | No OEL                    |                       |         |
| <b>878</b>      | 100-51-6   | Benzyl alcohol                        | 2.50x10 <sup>4</sup> | 3.47x10 <sup>-3</sup> | No OEL                    |                       |         |
| <b>878</b>      | 111-76-2   | Butyl cellosolve (R)                  | 1.19x10 <sup>4</sup> | 1.66x10 <sup>-3</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>1</sup>  | FALSE   |
| <b>878</b>      | 76-22-2    | Camphor                               | 1.49x10 <sup>2</sup> | 2.07x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| <b>878</b>      | 76-12-0    | Chlorofluorocarbon-112                | 2.50x10 <sup>2</sup> | 3.47x10 <sup>-5</sup> | 1.69x10 <sup>4</sup>      | 2.00x10 <sup>1</sup>  | FALSE   |
| <b>878</b>      | 110-82-7   | Cyclohexane                           | 6.81x10 <sup>2</sup> | 9.46x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |

**Table D.1-14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 108-93-0   | Cyclohexanol                     | 1.60x10 <sup>1</sup> | 2.22x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE   |
| 878             | 108-91-8   | Cyclohexylamine                  | 3.65x10 <sup>4</sup> | 5.07x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE   |
| 878             | 124-18-5   | Decane                           | 7.00x10 <sup>2</sup> | 9.72x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 115-10-6   | Dimethyl ether                   | 1.83x10 <sup>3</sup> | 2.55x10 <sup>-4</sup> | 1.91x10 <sup>4</sup>      | 2.26x10 <sup>1</sup>  | FALSE   |
| 878             | 67-68-5    | Dimethylsulfoxide                | 8.80x10 <sup>3</sup> | 1.22x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 109-87-5   | Dimethoxymethane (methylal)      | 6.80                 | 9.45x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE   |
| 878             | 2807-30-9  | Ektasolve ep                     | 4.54x10 <sup>1</sup> | 6.30x10 <sup>-6</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 64-17-5    | Ethanol                          | 1.77x10 <sup>5</sup> | 2.46x10 <sup>-2</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 141-78-6   | Ethyl acetate                    | 9.75x10 <sup>2</sup> | 1.35x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 878             | 78-10-4    | Ethyl silicate                   | 9.57x10 <sup>2</sup> | 1.33x10 <sup>-4</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 74-85-1    | Ethylene                         | 1.03x10 <sup>5</sup> | 1.44x10 <sup>-2</sup> | No OEL                    |                       |         |
| 878             | 64-18-6    | Formic acid                      | 1.14x10 <sup>4</sup> | 1.58x10 <sup>-3</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>-1</sup> | FALSE   |
| 878             | 75-28-5    | Isobutane                        | 3.41x10 <sup>3</sup> | 4.74x10 <sup>-4</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 110-19-0   | Isobutyl acetate                 | 1.02x10 <sup>2</sup> | 1.42x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 878             | 67-63-0    | Isopropyl alcohol                | 4.42x10 <sup>5</sup> | 6.14x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 878             | 64742-88-7 | Medium aliphatic solvent naphtha | 5.22x10 <sup>2</sup> | 7.24x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 108-65-6   | Methoxy acetate                  | 1.06x10 <sup>3</sup> | 1.47x10 <sup>-4</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 878             | 4253-34-3  | Methyltriacetoxy silane          | 1.45x10 <sup>2</sup> | 2.02x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 1185-55-3  | Methyltrimethoxysilane           | 1.74x10 <sup>2</sup> | 2.41x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 628-63-7   | n-Amyl acetate                   | 8.76x10 <sup>2</sup> | 1.22x10 <sup>-4</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE   |
| 878             | 106-97-8   | n-Butane                         | 3.83x10 <sup>2</sup> | 5.32x10 <sup>-5</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 123-86-4   | n-Butyl acetate                  | 2.73x10 <sup>3</sup> | 3.79x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE   |

**Table D.1–14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 71-23-8    | n-Butyl alcohol                   | 1.35x10 <sup>4</sup> | 1.87x10 <sup>-3</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)      | 5.44x10 <sup>2</sup> | 7.56x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE   |
| 878             | 142-82-5   | n-Heptane                         | 1.21x10 <sup>3</sup> | 1.67x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 872-50-4   | N-Methyl-2-pyrrolidone            | 7.39x10 <sup>4</sup> | 1.03x10 <sup>-2</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 878             | 109-66-0   | Pentane                           | 6.49x10 <sup>2</sup> | 9.02x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 8002-05-9  | Petroleum                         | 9.07x10 <sup>2</sup> | 1.26x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 64742-47-8 | Petroleum distillate              | 3.46x10 <sup>3</sup> | 4.81x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer) | 2.10x10 <sup>2</sup> | 2.92x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 9036-19-5  | Poly(oxy-1,2-ethanediyl)          | 1.01x10 <sup>1</sup> | 1.40x10 <sup>-6</sup> | No OEL                    |                       |         |
| 878             | 74-98-6    | Propane                           | 4.25x10 <sup>3</sup> | 5.91x10 <sup>-4</sup> | 1.80x10 <sup>4</sup>      | 2.13x10 <sup>1</sup>  | FALSE   |
| 878             | 71-23-8    | Propyl alcohol                    | 8.11x10 <sup>3</sup> | 1.13x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 878             | 57-55-6    | Propylene glycol                  | 6.58x10 <sup>2</sup> | 9.14x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 110-86-1   | Pyridine                          | 3.87x10 <sup>2</sup> | 5.38x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE   |
| 878             | 78-92-2    | sec-Butyl alcohol                 | 2.67x10 <sup>3</sup> | 3.71x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 8052-41-3  | Stoddard solvent                  | 4.54x10 <sup>2</sup> | 6.31x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 75-65-0    | t-Butyl alcohol                   | 6.80                 | 9.45x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 26140-60-3 | Terphenyls                        | 9.54x10 <sup>2</sup> | 1.32x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 878             | 109-99-9   | Tetrahydrofuran                   | 8.46x10 <sup>2</sup> | 1.17x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 878             | 546-68-9   | Titanium isopropoxides            | 1.42x10 <sup>2</sup> | 1.97x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 26471-62-5 | Toluene diisocyanate              | 5.90x10 <sup>3</sup> | 8.20x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate          | 4.08x10 <sup>1</sup> | 5.67x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE   |
| 878             | 102-71-6   | Triethanolamine                   | 5.36x10 <sup>1</sup> | 7.44x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |

**Table D.1–14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|---|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha              | 5.50x10 <sup>-1</sup> | 7.64x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 893             | 67-68-5    | Dimethylsulfoxide <sup>a</sup>                          | 4.40x10 <sup>3</sup>  | 6.11x10 <sup>-4</sup> | No OEL                    |                       |         |
| 893             | 64-17-5    | Ethanol <sup>a</sup>                                    | 7.84x10 <sup>3</sup>  | 1.09x10 <sup>-3</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 893             | 67-63-0    | Isopropyl alcohol <sup>a</sup>                          | 3.54x10 <sup>5</sup>  | 4.92x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 893             | 108-65-6   | Methoxy acetate <sup>a</sup>                            | 1.64x10 <sup>4</sup>  | 2.28x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 893             | 872-50-4   | N-Methyl-2-pyrrolidone <sup>a</sup>                     | 1.64x10 <sup>4</sup>  | 2.28x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha <sup>a</sup> | 4.80x10 <sup>3</sup>  | 6.67x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| MESA            | 872-50-4   | 1-Methyl-2-pyrrolidinone <sup>b</sup>                   | 8.21x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| MESA            | 111-15-9   | 2-Ethoxyethyl acetate <sup>b</sup>                      | 1.91x10 <sup>3</sup>  | 2.65x10 <sup>-4</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>2</sup>  | FALSE   |
| MESA            | 64-19-7    | Acetic acid <sup>b</sup>                                | 1.06x10 <sup>3</sup>  | 1.47x10 <sup>-4</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| MESA            | 67-64-1    | Acetone <sup>b</sup>                                    | 7.49x10 <sup>5</sup>  | 1.04x10 <sup>-1</sup> | 5.90x10 <sup>3</sup>      | 6.97                  | FALSE   |
| MESA            | 110-82-7   | Cyclohexane <sup>b</sup>                                | 9.42x10 <sup>1</sup>  | 1.31x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| MESA            | 64-17-5    | Ethanol <sup>b</sup>                                    | 2.83x10 <sup>3</sup>  | 3.92x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| MESA            | 78-10-4    | Ethyl silicate <sup>b</sup>                             | 3.72x10 <sup>3</sup>  | 5.17x10 <sup>-4</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| MESA            | 67-63-1    | Isopropyl alcohol <sup>b</sup>                          | 6.55x10 <sup>3</sup>  | 9.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| MESA            | 123-86-4   | N-Butyl acetate <sup>b</sup>                            | 2.01x10 <sup>2</sup>  | 2.79x10 <sup>-5</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE   |
| MESA            | 71-23-8    | N-Propyl alcohol <sup>b</sup>                           | 4.02x10 <sup>2</sup>  | 5.59x10 <sup>-5</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                                   | 4.90x10 <sup>1</sup>  | 6.81x10 <sup>-6</sup> | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE   |
| 897             | 64-19-7    | Acetic acid   | 4.95x10 <sup>4</sup>  | 6.88x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 897             | 75-36-5    | Acetyl chloride   | 1.53x10 <sup>3</sup>  | 2.13x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 106-92-3   | Allyl glycidyl ether                                    | 1.67x10 <sup>1</sup>  | 2.32x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE   |
| 897             | 100-51-6   | Benzyl alcohol  | 5.21x10 <sup>2</sup>  | 7.24x10 <sup>-5</sup> | No OEL                    |                       |         |

**Table D.1–14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 897             | 128-37-0   | Butylated hydroxytoluene          | 9.90x10 <sup>1</sup>  | 1.37x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE   |
| 897             | 110-82-7   | Cyclohexane                       | 2.99                  | 4.15x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 897             | 124-40-3   | Dimethylamine                     | 3.98x10 <sup>2</sup>  | 5.53x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE   |
| 897             | 67-68-5    | Dimethylsulfoxide                 | 1.12x10 <sup>3</sup>  | 1.56x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 64-17-5    | Ethanol                           | 8.36x10 <sup>1</sup>  | 1.16x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 897             | 141-78-6   | Ethyl acetate                     | 1.78x10 <sup>4</sup>  | 2.47x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)       | 2.18x10 <sup>4</sup>  | 3.03x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE   |
| 897             | 78-10-4    | Ethyl silicate                    | 6.27x10 <sup>2</sup>  | 8.72x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 107-83-5   | Isohexanes                        | 1.41x10 <sup>4</sup>  | 1.96x10 <sup>-3</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 67-63-0    | Isopropyl alcohol                 | 7.77x10 <sup>4</sup>  | 1.08x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 897             | 8008-20-6  | Kerosene                          | 3.01x10 <sup>3</sup>  | 4.18x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 897             | 126-98-7   | Methacrylonitrile                 | 7.95x10 <sup>1</sup>  | 1.10x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 897             | 55-55-0    | Methyl amino phenol sulphate      | 4.11x10 <sup>2</sup>  | 5.70x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 75-79-6    | Methyltrichlorosilane             | 6.40x10 <sup>2</sup>  | 8.89x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 71-23-8    | n-Butyl alcohol                   | 1.57x10 <sup>2</sup>  | 2.19x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 897             | 142-82-5   | n-Heptane                         | 5.42x10 <sup>3</sup>  | 7.52x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 109-66-0   | Pentane                           | 1.91x10 <sup>3</sup>  | 2.66x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 79-21-0    | Peracetic acid                    | 5.65x10 <sup>1</sup>  | 7.85x10 <sup>-6</sup> | No OEL                    |                       |         |
| 897             | 9003-53-6  | Phenylethylene (styrene, monomer) | 8.00x10 <sup>-1</sup> | 1.11x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 71-23-8    | Propyl alcohol                    | 2.98x10 <sup>4</sup>  | 4.14x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 897             | 109-99-9   | Tetrahydrofuran                   | 1.17x10 <sup>4</sup>  | 1.62x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 897             | 998-30-1   | Triethoxysilane                   | 4.23x10 <sup>2</sup>  | 5.87x10 <sup>-5</sup> | No OEL                    |                       |         |

**Table D.1–14. Projected Volatile Organic Compound (VOC) Emissions  
Expanded Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEI/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 905             | 64-17-5    | Ethanol           | 1.15x10 <sup>-4</sup> | 1.60x10 <sup>-3</sup> | 1.88x10 <sup>-4</sup>     | 2.22x10 <sup>-1</sup> | FALSE   |
| 905             | 67-63-0    | Isopropyl alcohol | 2.47x10 <sup>-4</sup> | 3.44x10 <sup>-3</sup> | 4.90x10 <sup>-3</sup>     | 5.79                  | FALSE   |
| 905             | 109-99-9   | Tetrahydrofuran   | 6.69x10 <sup>3</sup>  | 9.29x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 963             | 67-63-0    | Isopropyl alcohol | 1.57x10 <sup>3</sup>  | 2.18x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute VOC emissions under the Expanded Operations Alternative.

<sup>b</sup> If Building 893 is not replaced by the MESA Complex configuration, the VOCs listed would not contribute to VOC emissions under the Expanded Operations Alternative.

**Table D.1–15. Projected Volatile Organic Compound (VOC) Emissions  
Reduced Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                              | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|---------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 605             | 64-17-5    | Ethanol                               | 4.54x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 605             | 79-09-4    | Propionic acid                        | 1.03x10 <sup>2</sup> | 1.43x10 <sup>-5</sup> | 3.00x10 <sup>2</sup>      | 3.54x10 <sup>-1</sup> | FALSE   |
| 6580            | 64-17-5    | Ethanol                               | 2.97x10 <sup>1</sup> | 4.12x10 <sup>-6</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 6580            | 141-78-6   | Ethyl acetate                         | 3.60x10 <sup>3</sup> | 5.00x10 <sup>-4</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 858             | 64-19-7    | Acetic acid                           | 2.16x10 <sup>6</sup> | 3.00x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 858             | 107-83-5   | Isohexanes                            | 9.38x10 <sup>2</sup> | 1.30x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 858             | 108-65-6   | Methoxy acetate                       | 3.98x10 <sup>4</sup> | 5.53x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 870             | 872-50-4   | 1-Methyl-2-Pyrrolidinone              | 1.54x10 <sup>4</sup> | 2.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 870             | 100-51-6   | Alcohol, Benzyl                       | 7.89x10 <sup>5</sup> | 1.10x10 <sup>-1</sup> | No OEL                    |                       |         |
| 870             | 64-17-5    | Alcohol, Ethyl                        | 3.08x10 <sup>7</sup> | 4.28                  | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 110-71-4   | 1,2-Dimethoxyethane                   | 7.18x10 <sup>2</sup> | 9.97x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 142-96-1   | 1-Butoxybutane, butyl ether           | 6.53x10 <sup>2</sup> | 9.07x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 90-72-2    | 2,4,6-Tri(dimethylaminomethyl) phenol | 2.69x10 <sup>3</sup> | 3.74x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 112-34-5   | 2-Butyl oxyethanol dipropylene glycol | 3.94x10 <sup>4</sup> | 5.47x10 <sup>-3</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 878             | 111-15-9   | 2-Ethoxyethyl acetate                 | 8.53x10 <sup>3</sup> | 1.18x10 <sup>-3</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 878             | 64-19-7    | Acetic acid                           | 1.28x10 <sup>6</sup> | 1.77x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 878             | 64742-89-8 | Aliphatic petroleum distillates       | 4.52x10 <sup>3</sup> | 6.27x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 100-51-6   | Benzyl alcohol                        | 1.25x10 <sup>4</sup> | 1.74x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 111-76-2   | Butyl cellosolve (R)                  | 5.97x10 <sup>3</sup> | 8.29x10 <sup>-4</sup> | 2.40x10 <sup>2</sup>      | 2.83x10 <sup>-1</sup> | FALSE   |
| 878             | 76-22-2    | Camphor                               | 7.44x10 <sup>1</sup> | 1.03x10 <sup>-5</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| 878             | 76-12-0    | Chlorofluorocarbon-112                | 1.25x10 <sup>2</sup> | 1.74x10 <sup>-5</sup> | 1.69x10 <sup>4</sup>      | 2.00x10 <sup>1</sup>  | FALSE   |
| 878             | 110-82-7   | Cyclohexane                           | 3.40x10 <sup>2</sup> | 4.73x10 <sup>-5</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |

**Table D.1–15. Projected Volatile Organic Compound (VOC) Emissions Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                         | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 108-93-0   | Cyclohexanol                     | 8.00                 | 1.11x10 <sup>-6</sup> | 2.00x10 <sup>3</sup>      | 2.36                  | FALSE   |
| 878             | 108-91-8   | Cyclohexylamine                  | 1.83x10 <sup>4</sup> | 2.54x10 <sup>-3</sup> | 4.00x10 <sup>2</sup>      | 4.72x10 <sup>-1</sup> | FALSE   |
| 878             | 124-18-5   | Decane                           | 3.50x10 <sup>2</sup> | 4.86x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 115-10-6   | Dimethyl ether                   | 9.17x10 <sup>2</sup> | 1.27x10 <sup>-4</sup> | 1.91x10 <sup>4</sup>      | 2.26x10 <sup>1</sup>  | FALSE   |
| 878             | 67-68-5    | Dimethylsulfoxide                | 4.40x10 <sup>3</sup> | 6.11x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 109-87-5   | Dimethoxymethane (methylal)      | 3.40                 | 4.72x10 <sup>-7</sup> | 3.10x10 <sup>4</sup>      | 3.66x10 <sup>1</sup>  | FALSE   |
| 878             | 2807-30-9  | Ektasolve ep                     | 2.27x10 <sup>1</sup> | 3.15x10 <sup>-6</sup> | 8.50x10 <sup>-2</sup>     | 1.00                  | FALSE   |
| 878             | 64-17-5    | Ethanol                          | 8.84x10 <sup>4</sup> | 1.23x10 <sup>-2</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 878             | 141-78-6   | Ethyl acetate                    | 4.88x10 <sup>2</sup> | 6.77x10 <sup>-5</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 878             | 78-10-4    | Ethyl silicate                   | 4.79x10 <sup>2</sup> | 6.65x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 74-85-1    | Ethylene                         | 5.17x10 <sup>4</sup> | 7.18x10 <sup>-3</sup> | No OEL                    |                       |         |
| 878             | 64-18-6    | Formic acid                      | 5.68x10 <sup>3</sup> | 7.89x10 <sup>-4</sup> | 9.00x10 <sup>1</sup>      | 1.06x10 <sup>-1</sup> | FALSE   |
| 878             | 75-28-5    | Isobutane                        | 1.71x10 <sup>3</sup> | 2.37x10 <sup>-4</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 110-19-0   | Isobutyl acetate                 | 5.10x10 <sup>1</sup> | 7.08x10 <sup>-6</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 878             | 67-63-0    | Isopropyl alcohol                | 2.21x10 <sup>5</sup> | 3.07x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 878             | 64742-88-7 | Medium aliphatic solvent naphtha | 2.61x10 <sup>2</sup> | 3.62x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 108-65-6   | Methoxy acetate                  | 5.30x10 <sup>2</sup> | 7.37x10 <sup>-5</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 878             | 4253-34-3  | Methyltriacetoxy silane          | 7.26x10 <sup>1</sup> | 1.01x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 1185-55-3  | Methyltrimethoxysilane           | 8.69x10 <sup>1</sup> | 1.21x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 628-63-7   | n-Amyl acetate                   | 4.38x10 <sup>2</sup> | 6.08x10 <sup>-5</sup> | 2.60x10 <sup>3</sup>      | 3.07                  | FALSE   |
| 878             | 106-97-8   | n-Butane                         | 1.91x10 <sup>2</sup> | 2.66x10 <sup>-5</sup> | 1.90x10 <sup>4</sup>      | 2.24x10 <sup>1</sup>  | FALSE   |
| 878             | 123-86-4   | n-Butyl acetate                  | 1.36x10 <sup>3</sup> | 1.89x10 <sup>-4</sup> | 7.10x10 <sup>3</sup>      | 8.38                  | FALSE   |

**Table D.1–15. Projected Volatile Organic Compound (VOC) Emissions Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 71-23-8    | n-Butyl alcohol                   | 6.74x10 <sup>3</sup> | 9.36x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 2426-08-6  | n-Butyl glycidyl ether (BGE)      | 2.72x10 <sup>2</sup> | 3.78x10 <sup>-5</sup> | 1.33x10 <sup>3</sup>      | 1.57                  | FALSE   |
| 878             | 142-82-5   | n-Heptane                         | 6.03x10 <sup>2</sup> | 8.37x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 872-50-4   | N-Methyl-2-pyrrolidone            | 3.70x10 <sup>4</sup> | 5.13x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 878             | 109-66-0   | Pentane                           | 3.25x10 <sup>2</sup> | 4.51x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 8002-05-9  | Petroleum                         | 4.53x10 <sup>2</sup> | 6.30x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 64742-47-8 | Petroleum distillate              | 1.73x10 <sup>3</sup> | 2.40x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 9003-53-6  | Phenylethylene (styrene, monomer) | 1.05x10 <sup>2</sup> | 1.46x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 878             | 9036-19-5  | Poly(oxy-1,2-ethanediyl)          | 5.03                 | 6.99x10 <sup>-7</sup> | No OEL                    |                       |         |
| 878             | 74-98-6    | Propane                           | 2.13x10 <sup>3</sup> | 2.95x10 <sup>-4</sup> | 1.80x10 <sup>4</sup>      | 2.13x10 <sup>1</sup>  | FALSE   |
| 878             | 71-23-8    | Propyl alcohol                    | 4.06x10 <sup>3</sup> | 5.63x10 <sup>-4</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 878             | 57-55-6    | Propylene glycol                  | 3.29x10 <sup>2</sup> | 4.57x10 <sup>-5</sup> | No OEL                    |                       |         |
| 878             | 110-86-1   | Pyridine                          | 1.94x10 <sup>2</sup> | 2.69x10 <sup>-5</sup> | 1.50x10 <sup>2</sup>      | 1.77x10 <sup>-1</sup> | FALSE   |
| 878             | 78-92-2    | sec-Butyl alcohol                 | 1.34x10 <sup>3</sup> | 1.86x10 <sup>-4</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 8052-41-3  | Stoddard solvent                  | 2.27x10 <sup>2</sup> | 3.15x10 <sup>-5</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 878             | 75-65-0    | t-Butyl alcohol                   | 3.40                 | 4.72x10 <sup>-7</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 878             | 26140-60-3 | Terphenyls                        | 4.77x10 <sup>2</sup> | 6.62x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 878             | 109-99-9   | Tetrahydrofuran                   | 4.23x10 <sup>2</sup> | 5.87x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 878             | 546-68-9   | Titanium isopropoxides            | 7.09x10 <sup>1</sup> | 9.84x10 <sup>-6</sup> | No OEL                    |                       |         |
| 878             | 26471-62-5 | Toluene diisocyanate              | 2.95x10 <sup>3</sup> | 4.10x10 <sup>-4</sup> | No OEL                    |                       |         |
| 878             | 91-08-7    | Toluene-2,6-diisocyanate          | 2.04x10 <sup>1</sup> | 2.83x10 <sup>-6</sup> | 7.00x10 <sup>-1</sup>     | 8.26x10 <sup>-4</sup> | FALSE   |
| 878             | 102-71-6   | Triethanolamine                   | 2.68x10 <sup>1</sup> | 3.72x10 <sup>-6</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |

**Table D.1–15. Projected Volatile Organic Compound (VOC) Emissions Reduced Operations Alternative Screening Level Analysis (continued)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                   | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|--|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 878             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.75x10 <sup>-1</sup> | 3.82x10 <sup>-8</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 893             | 67-68-5    | Dimethylsulfoxide                          | 2.20x10 <sup>3</sup>  | 3.06x10 <sup>-4</sup> | No OEL                    |                       |         |
| 893             | 64-17-5    | Ethanol                                    | 3.92x10 <sup>3</sup>  | 5.44x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 893             | 67-63-0    | Isopropyl alcohol                          | 1.77x10 <sup>5</sup>  | 2.46x10 <sup>-2</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 893             | 108-65-6   | Methoxy acetate                            | 8.20x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 2.75x10 <sup>3</sup>      | 3.25                  | FALSE   |
| 893             | 872-50-4   | N-Methyl-2-pyrrolidone                     | 8.21x10 <sup>3</sup>  | 1.14x10 <sup>-3</sup> | 8.00x10 <sup>2</sup>      | 9.45x10 <sup>-1</sup> | FALSE   |
| 893             | 8032-32-4  | Varnish Makers and Painters (VM&P) naphtha | 2.40x10 <sup>3</sup>  | 3.33x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                      | 4.51x10 <sup>1</sup>  | 6.26x10 <sup>-6</sup> | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE   |
| 897             | 64-19-7    | Acetic acid                                | 4.56x10 <sup>4</sup>  | 6.33x10 <sup>-3</sup> | 2.50x10 <sup>2</sup>      | 2.95x10 <sup>-1</sup> | FALSE   |
| 897             | 75-36-5    | Acetyl chloride                            | 1.41x10 <sup>3</sup>  | 1.96x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 106-92-3   | Allyl glycidyl ether                       | 1.54x10 <sup>1</sup>  | 2.13x10 <sup>-6</sup> | 2.20x10 <sup>2</sup>      | 2.60x10 <sup>-1</sup> | FALSE   |
| 897             | 100-51-6   | Benzyl alcohol                             | 4.79x10 <sup>2</sup>  | 6.66x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 128-37-0   | Butylated hydroxytoluene                   | 9.11x10 <sup>1</sup>  | 1.26x10 <sup>-5</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-1</sup> | FALSE   |
| 897             | 110-82-7   | Cyclohexane                                | 2.75                  | 3.82x10 <sup>-7</sup> | 7.00x10 <sup>3</sup>      | 8.26                  | FALSE   |
| 897             | 124-40-3   | Dimethylamine                              | 3.66x10 <sup>2</sup>  | 5.09x10 <sup>-5</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE   |
| 897             | 67-68-5    | Dimethylsulfoxide                          | 1.03x10 <sup>3</sup>  | 1.44x10 <sup>-4</sup> | No OEL                    |                       |         |
| 897             | 64-17-5    | Ethanol                                    | 7.69x10 <sup>1</sup>  | 1.07x10 <sup>-5</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 897             | 141-78-6   | Ethyl acetate                              | 1.64x10 <sup>4</sup>  | 2.28x10 <sup>-3</sup> | 1.40x10 <sup>4</sup>      | 1.65x10 <sup>1</sup>  | FALSE   |
| 897             | 60-29-7    | Ethyl ether (diethyl ether)                | 2.01x10 <sup>4</sup>  | 2.79x10 <sup>-3</sup> | 1.20x10 <sup>4</sup>      | 1.42x10 <sup>1</sup>  | FALSE   |
| 897             | 78-10-4    | Ethyl silicate                             | 5.77x10 <sup>2</sup>  | 8.02x10 <sup>-5</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 107-83-5   | Isohexanes                                 | 1.30x10 <sup>4</sup>  | 1.80x10 <sup>-3</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 67-63-0    | Isopropyl alcohol                          | 7.15x10 <sup>4</sup>  | 9.93x10 <sup>-3</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

**Table D.1–15. Projected Volatile Organic Compound (VOC) Emissions Reduced Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                          | EMISSIONS g/yr        | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULTS |
|-----------------|------------|-----------------------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
| 897             | 8008-20-6  | Kerosene                          | 2.77x10 <sup>3</sup>  | 3.85x10 <sup>-4</sup> | 1.00x10 <sup>3</sup>      | 1.18                  | FALSE   |
| 897             | 126-98-7   | Methacrylonitrile                 | 7.31x10 <sup>1</sup>  | 1.02x10 <sup>-5</sup> | 2.70x10 <sup>1</sup>      | 3.19x10 <sup>-2</sup> | FALSE   |
| 897             | 55-55-0    | Methal amino phenol sulphate      | 3.78x10 <sup>2</sup>  | 5.25x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 75-79-6    | Methyltrichlorosilane             | 5.89x10 <sup>2</sup>  | 8.18x10 <sup>-5</sup> | No OEL                    |                       |         |
| 897             | 71-23-8    | n-Butyl alcohol                   | 1.45x10 <sup>2</sup>  | 2.01x10 <sup>-5</sup> | 3.00x10 <sup>3</sup>      | 3.54                  | FALSE   |
| 897             | 142-82-5   | n-Heptane                         | 4.98x10 <sup>3</sup>  | 6.92x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 109-66-0   | Pentane                           | 1.76x10 <sup>3</sup>  | 2.44x10 <sup>-4</sup> | 3.50x10 <sup>3</sup>      | 4.13                  | FALSE   |
| 897             | 79-21-0    | Peracetic acid                    | 5.20x10 <sup>1</sup>  | 7.22x10 <sup>-6</sup> | No OEL                    |                       |         |
| 897             | 9003-53-6  | Phenylethylene (styrene, monomer) | 7.36x10 <sup>-1</sup> | 1.02x10 <sup>-7</sup> | 8.50x10 <sup>2</sup>      | 1.00                  | FALSE   |
| 897             | 71-23-8    | Propyl alcohol                    | 2.74x10 <sup>4</sup>  | 3.81x10 <sup>-3</sup> | 4.92x10 <sup>3</sup>      | 5.81                  | FALSE   |
| 897             | 109-99-9   | Tetrahydrofuran                   | 1.07x10 <sup>4</sup>  | 1.49x10 <sup>-3</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 897             | 998-30-1   | Triethoxysilane                   | 3.89x10 <sup>2</sup>  | 5.40x10 <sup>-5</sup> | No OEL                    |                       |         |
| 905             | 64-17-5    | Ethanol                           | 1.15x10 <sup>3</sup>  | 1.60x10 <sup>-4</sup> | 1.88x10 <sup>4</sup>      | 2.22x10 <sup>1</sup>  | FALSE   |
| 905             | 67-63-0    | Isopropyl alcohol                 | 2.47x10 <sup>3</sup>  | 3.44x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |
| 905             | 109-99-9   | Tetrahydrofuran                   | 6.69x10 <sup>2</sup>  | 9.29x10 <sup>-5</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE   |
| 963             | 67-63-0    | Isopropyl alcohol                 | 7.85x10 <sup>2</sup>  | 1.09x10 <sup>-4</sup> | 4.90x10 <sup>3</sup>      | 5.79                  | FALSE   |

**Table D.1–16. Additional Chemical List Baseline Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                            | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 858             | 7664-41-7  | Ammonia                             | 1.36x10 <sup>4</sup> | 1.89x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 858             | 7784-42-1  | Arsine (15%)                        | 1.55x10 <sup>3</sup> | 2.16x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 858             | 7782-50-5  | Chlorine                            | 9.90x10 <sup>4</sup> | 1.38x10 <sup>-2</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | FALSE  |
| 858             | 7782-41-4  | Fluorine (5%) in argon              | 1.70x10 <sup>3</sup> | 2.36x10 <sup>-4</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 858             | 10035-10-6 | Hydrogen bromide (hydrobromic acid) | 1.37x10 <sup>4</sup> | 1.91x10 <sup>-3</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 858             | 7783-54-2  | Nitrogen trifluoride                | 5.00x10 <sup>3</sup> | 6.94x10 <sup>-4</sup> | 2.90x10 <sup>2</sup>      | 3.42x10 <sup>-1</sup> | FALSE  |
| 858             | 109-99-9   | Tetrahydrofuran, anhydrous, 99.9%   | 1.68x10 <sup>3</sup> | 2.33x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 858             | 156-60-5   | Trans,1,2-dichloroethylene          | 4.02x10 <sup>4</sup> | 5.59x10 <sup>-3</sup> | 7.90x10 <sup>3</sup>      | 9.33                  | FALSE  |
| 878             | 1336-21-6  | Ammonium hydroxide                  | 1.17x10 <sup>6</sup> | 1.63x10 <sup>-1</sup> | 1.4x10 <sup>2</sup>       | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 7697-37-2  | Nitric acid                         | 6.33x10 <sup>4</sup> | 8.79x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-41-7  | Ammonia                             | 1.36x10 <sup>4</sup> | 1.89x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine                              | 5.54x10 <sup>4</sup> | 7.69x10 <sup>-3</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7783-07-5  | Hydrogen selenide                   | 4.77x10 <sup>4</sup> | 6.63x10 <sup>-3</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7803-51-2  | Phosphine (100%)                    | 2.27x10 <sup>3</sup> | 3.15x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 7803-62-5  | Silane (silicon tetrafluoride)      | 1.03x10 <sup>3</sup> | 1.43x10 <sup>-4</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7446-09-5  | Sulfur dioxide                      | 1.51x10 <sup>2</sup> | 2.10x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–17. Additional Chemical List No Action Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                            | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 858             | 7664-41-7  | Ammonia                             | 2.38x10 <sup>4</sup> | 3.31x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 858             | 7784-42-1  | Arsine (15%)                        | 2.71x10 <sup>3</sup> | 3.77x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 858             | 7782-50-5  | Chlorine                            | 1.73x10 <sup>5</sup> | 2.41x10 <sup>-2</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | TRUE   |
| 858             | 7782-41-4  | Fluorine (5%) in argon              | 2.98x10 <sup>3</sup> | 4.13x10 <sup>-4</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 858             | 10035-10-6 | Hydrogen bromide (hydrobromic acid) | 2.40x10 <sup>4</sup> | 3.34x10 <sup>-3</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 858             | 7783-54-2  | Nitrogen trifluoride                | 8.74x10 <sup>3</sup> | 1.21x10 <sup>-3</sup> | 2.90x10 <sup>2</sup>      | 3.42x10 <sup>-1</sup> | FALSE  |
| 858             | 109-99-9   | Tetrahydrofuran, anhydrous, 99.9%   | 2.94x10 <sup>3</sup> | 4.08x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 858             | 156-60-5   | Trans,1,2-dichloroethylene          | 7.04x10 <sup>4</sup> | 9.78x10 <sup>-3</sup> | 7.90x10 <sup>3</sup>      | 9.33                  | FALSE  |
| 878             | 1336-21-6  | Ammonium hydroxide                  | 1.76x10 <sup>6</sup> | 2.45x10 <sup>-1</sup> | 1.4x10 <sup>2</sup>       | 1.65x10 <sup>-1</sup> | TRUE   |
| 878             | 7697-37-2  | Nitric acid                         | 9.49x10 <sup>4</sup> | 1.32x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-41-7  | Ammonia                             | 2.72x10 <sup>4</sup> | 3.78x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine                              | 1.11x10 <sup>5</sup> | 1.54x10 <sup>-2</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7783-07-5  | Hydrogen selenide                   | 9.54x10 <sup>4</sup> | 1.33x10 <sup>-2</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7803-51-2  | Phosphine (100%)                    | 4.54x10 <sup>3</sup> | 6.30x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 7803-62-5  | Silane (silicon tetrafluoride)      | 2.06x10 <sup>3</sup> | 2.86x10 <sup>-4</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7446-09-5  | Sulfur dioxide                      | 3.02x10 <sup>2</sup> | 4.19x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute chemical emissions under the Expanded Operations Alternative. If implemented, MESA Complex configuration operations are not expected to contribute additional chemical emissions.

**Table D.1–18. Additional Chemical List, Expanded Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                    | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|---|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 858             | 7664-41-7  | Ammonia                                     | 2.55x10 <sup>4</sup> | 3.54x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 858             | 7784-42-1  | Arsine (15%)                                | 2.91x10 <sup>3</sup> | 4.04x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 858             | 7782-50-5  | Chlorine                                    | 1.86x10 <sup>5</sup> | 2.58x10 <sup>-2</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | TRUE   |
| 858             | 7782-41-4  | Fluorine (5%) in argon                      | 3.19x10 <sup>3</sup> | 4.43x10 <sup>-4</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 858             | 10035-10-6 | Hydrogen bromide (hydrobromic acid)         | 2.58x10 <sup>4</sup> | 3.58x10 <sup>-3</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 858             | 7783-54-2  | Nitrogen trifluoride                        | 9.37x10 <sup>3</sup> | 1.30x10 <sup>-3</sup> | 2.90x10 <sup>2</sup>      | 3.42x10 <sup>-1</sup> | FALSE  |
| 858             | 109-99-9   | Tetrahydrofuran, anhydrous, 99.9%           | 3.15x10 <sup>3</sup> | 4.37x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 858             | 156-60-5   | Trans,1,2-dichloroethylene                  | 7.54x10 <sup>4</sup> | 1.05x10 <sup>-2</sup> | 7.90x10 <sup>3</sup>      | 9.33                  | FALSE  |
| 878             | 1336-21-6  | Ammonium hydroxide                          | 2.35x10 <sup>6</sup> | 3.26x10 <sup>-1</sup> | 1.4x10 <sup>2</sup>       | 1.65x10 <sup>-1</sup> | TRUE   |
| 878             | 7697-37-2  | Nitric acid                                 | 1.27x10 <sup>5</sup> | 1.76x10 <sup>-2</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-41-7  | Ammonia <sup>a</sup>                        | 2.72x10 <sup>4</sup> | 3.78x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine <sup>a</sup>                         | 1.11x10 <sup>5</sup> | 1.54x10 <sup>-2</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7783-07-5  | Hydrogen selenide <sup>a</sup>              | 9.54x10 <sup>4</sup> | 1.33x10 <sup>-2</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7803-51-2  | Phosphine (100%) <sup>a</sup>               | 4.54x10 <sup>3</sup> | 6.30x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 7803-62-5  | Silane (silicon tetrafluoride) <sup>a</sup> | 2.06x10 <sup>3</sup> | 2.86x10 <sup>-4</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7446-09-5  | Sulfur dioxide <sup>a</sup>                 | 3.02x10 <sup>2</sup> | 4.19x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute chemical emissions under the Expanded Operations Alternative. If implemented, MESA Complex configuration operations are not expected to contribute additional chemical emissions.

**Table D.1–19. Additional Chemical List, Reduced Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                            | EMISSIONS g/yr       | EMISSION RATE g/sec   | OEL/100 µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|-------------------------------------|----------------------|-----------------------|---------------------------|-----------------------|--------|
| 858             | 7664-41-7  | Ammonia                             | 9.12x10 <sup>3</sup> | 1.27x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 858             | 7784-42-1  | Arsine (15%)                        | 1.04x10 <sup>3</sup> | 1.44x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 858             | 7782-50-5  | Chlorine                            | 6.63x10 <sup>4</sup> | 9.21x10 <sup>-3</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | FALSE  |
| 858             | 7782-41-4  | Fluorine (5%) in argon              | 1.14x10 <sup>3</sup> | 1.58x10 <sup>-4</sup> | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE  |
| 858             | 10035-10-6 | Hydrogen bromide (hydrobromic acid) | 9.21x10 <sup>3</sup> | 1.28x10 <sup>-3</sup> | 6.70x10 <sup>1</sup>      | 7.91x10 <sup>-2</sup> | FALSE  |
| 858             | 7783-54-2  | Nitrogen trifluoride                | 3.35x10 <sup>3</sup> | 4.65x10 <sup>-4</sup> | 2.90x10 <sup>2</sup>      | 3.42x10 <sup>-1</sup> | FALSE  |
| 858             | 109-99-9   | Tetrahydrofuran, anhydrous, 99.9%   | 1.12x10 <sup>3</sup> | 1.56x10 <sup>-4</sup> | 1.50x10 <sup>3</sup>      | 1.77                  | FALSE  |
| 858             | 156-60-5   | Trans,1,2-dichloroethylene          | 2.70x10 <sup>4</sup> | 3.74x10 <sup>-3</sup> | 7.90x10 <sup>3</sup>      | 9.33                  | FALSE  |
| 878             | 1336-21-6  | Ammonium hydroxide                  | 1.17x10 <sup>6</sup> | 1.63x10 <sup>-1</sup> | 1.4x10 <sup>2</sup>       | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 7697-37-2  | Nitric acid                         | 6.33x10 <sup>4</sup> | 8.79x10 <sup>-3</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 893             | 7664-41-7  | Ammonia                             | 1.36x10 <sup>4</sup> | 1.89x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine                              | 5.54x10 <sup>4</sup> | 7.69x10 <sup>-3</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7783-07-5  | Hydrogen selenide                   | 4.77x10 <sup>4</sup> | 6.63x10 <sup>-3</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | TRUE   |
| 893             | 7803-51-2  | Phosphine (100%)                    | 2.27x10 <sup>3</sup> | 3.15x10 <sup>-4</sup> | 1.40                      | 1.65x10 <sup>-3</sup> | FALSE  |
| 893             | 7803-62-5  | Silane (silicon tetrafluoride)      | 1.03x10 <sup>3</sup> | 1.43x10 <sup>-4</sup> | 6.60x10 <sup>1</sup>      | 7.79x10 <sup>-3</sup> | FALSE  |
| 893             | 7446-09-5  | Sulfur dioxide                      | 1.51x10 <sup>2</sup> | 2.10x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |

**Table D.1–20. No Action Alternative Noncarcinogenic Chemical Emissions Exceeding the Threshold Emission Value**

| BUILDING NUMBER | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS    | EMISSIONS            |                       | ER (g/sec)            | OEL/100 mg/m <sup>3</sup> | TEV (g/sec)           | RESULT |
|-----------------|------------|---|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
|                 |            |   | g/yr                 | EF                    |                       |                           |                       |        |
| 858             | 7782-50-5  | Chlorine                                | 1.73x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | FALSE  |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 3.10x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 1.29x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 858             | 7697-37-2  | Nitric acid                             | 3.99x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 1.66x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 858             | 1310-73-2  | Sodium hydroxide                        | 6.12x10 <sup>7</sup> | 0.00                  | 0.00                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)          | 1.68x10 <sup>5</sup> | 2.40x10 <sup>-3</sup> | 5.59x10 <sup>-5</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                       | 8.98x10 <sup>3</sup> | 2.00x10 <sup>-1</sup> | 2.49x10 <sup>-4</sup> | 1.00x10 <sup>-2</sup>     | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                          | 1.04x10 <sup>4</sup> | 1.00x10 <sup>-2</sup> | 1.45x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE  |
| 870             | 111-42-2   | Diethanolamine (85%)                    | 3.05x10 <sup>5</sup> | 2.40x10 <sup>-3</sup> | 1.02x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7429-90-5  | Aluminum                                | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-50-8  | Copper                                  | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                         | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | FALSE  |
| 870             | 7786-81-4  | Nickel Sulfate                          | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>-1</sup>     | 1.77x10 <sup>-4</sup> | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                         | 1.10x10 <sup>6</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-3</sup> | 4.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 7631-86-9  | Silica                                  | 9.04x10 <sup>5</sup> | 2.50x10 <sup>-1</sup> | 3.14x10 <sup>-2</sup> | 6.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                           | 1.10x10 <sup>6</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)          | 2.50x10 <sup>6</sup> | 0.00                  | 0.00                  | 1.00x10 <sup>2</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 1336-21-6  | Ammonium Hydroxide                      | 1.76x10 <sup>6</sup> | 2.00x10 <sup>-1</sup> | 4.89x10 <sup>-2</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE  |
| 878             | 7440-48-4  | Cobalt                                  | 3.03x10 <sup>4</sup> | 0.01                  | 4.21x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-50-8  | Copper dusts and mists, as copper       | 1.14x10 <sup>5</sup> | 0.26                  | 4.12x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |

**Table D.1–20. No Action Alternative Noncarcinogenic Chemical Emissions Exceeding the Threshold Emission Value (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS | EMISSIONS            |                       | ER (g/sec)            | OEL/100 mg/m <sup>3</sup> | TEV (g/sec)           | RESULT |
|-----------------|------------|--------------------------------------|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
|                 |            |                                      | g/yr                 | EF                    |                       |                           |                       |        |
| 878             | 7440-74-6  | Indium & compounds as indium         | 1.32x10 <sup>4</sup> | 0.01                  | 1.83x10 <sup>-5</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 878             | 7439-92-1  | Lead                                 | 7.97x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-97-6  | Mercury                              | 4.08x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE  |
| 878             | 14808-60-7 | Quartz                               | 6.03x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 7631-86-9  | Silica, fused (respirable)           | 9.68x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-22-4  | Silver metal                         | 2.10x10 <sup>4</sup> | 0.00                  | 0.00                  | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | FALSE  |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate             | 4.33x10 <sup>3</sup> | 0.03                  | 1.80x10 <sup>-5</sup> | 3.60x10 <sup>-1</sup>     | 4.25x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-62-2  | Vanadium (fume or dust)              | 3.27x10 <sup>4</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine                               | 1.11x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 893             | 7783-07-5  | Hydrogen selenide                    | 9.54x10 <sup>4</sup> | 1.50x10 <sup>-2</sup> | 1.99x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 981             | 7664-93-9  | Sulfuric acid                        | 1.41x10 <sup>5</sup> | 0.033                 | 6.45x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |

Sources: SNL/NM 1998c, cc

**Table D.1–21. Expanded Operations Alternative  
Noncarcinogenic Chemical Emissions Exceeding the TEV**

| BUILDING SOURCE | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS    | EMISSIONS            |                       | ER (g/sec)            | OEL/100 mg/m <sup>3</sup> | TEV (g/sec)           | RESULTS |
|-----------------|------------|---|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
|                 |            |   | g/yr                 | EF                    |                       |                           |                       |         |
| 858             | 7782-50-5  | Chlorine                                | 1.86x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-2</sup> | FALSE   |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 3.33x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 1.39x10 <sup>-4</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE   |
| 858             | 7697-37-2  | Nitric acid                             | 4.27x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 1.78x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 858             | 1310-73-2  | Sodium hydroxide                        | 6.56x10 <sup>7</sup> | 0.00                  | 0.00                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)          | 1.68x10 <sup>5</sup> | 2.40x10 <sup>-3</sup> | 5.59x10 <sup>-5</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | FALSE   |
| 870             | 1333-82-0  | Chromium Trioxide                       | 8.98x10 <sup>3</sup> | 2.00x10 <sup>-1</sup> | 2.49x10 <sup>-4</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-5</sup> | TRUE    |
| 870             | 7440-48-4  | Cobalt (17.4%)                          | 1.04x10 <sup>4</sup> | 1.00x10 <sup>-2</sup> | 1.45x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE   |
| 870             | 111-42-2   | Diethanolamine (85%)                    | 3.05x10 <sup>5</sup> | 2.40x10 <sup>-3</sup> | 1.02x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE   |
| 870             | 7429-90-5  | Aluminum                                | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 870             | 7440-50-8  | Copper                                  | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE   |
| 870             | 7718-54-9  | Nickel Chloride                         | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-4</sup> | FALSE   |
| 870             | 7786-81-4  | Nickel Sulfate                          | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-4</sup> | FALSE   |
| 870             | 7664-38-2  | Phosphoric Acid                         | 1.10x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE   |
| 870             | 7631-86-9  | Silica                                  | 9.04x10 <sup>5</sup> | 2.50x10 <sup>-1</sup> | 3.14x10 <sup>-2</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE   |
| 870             | 7664-93-9  | Sulfuric Acid                           | 1.10x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE   |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)          | 3.33x10 <sup>6</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE   |
| 878             | 1336-21-6  | Ammonium hydroxide                      | 2.35x10 <sup>6</sup> | 0.20                  | 6.52x10 <sup>-2</sup> | 1.40x10 <sup>2</sup>      | 1.65x10 <sup>-1</sup> | FALSE   |
| 878             | 7440-48-4  | Cobalt                                  | 4.04x10 <sup>4</sup> | 0.01                  | 5.61x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE   |
| 878             | 7440-50-8  | Copper dusts and mists, as copper       | 1.52x10 <sup>5</sup> | 0.26                  | 5.49x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE   |

**Table D.1–21. Expanded Operations Alternative  
Noncarcinogenic Chemical Emissions Exceeding the TEV (concluded)**

| BUILDING SOURCE | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS | EMISSIONS            |                       | ER (g/sec)            | OEL/100 mg/m <sup>3</sup> | TEV (g/sec)           | RESULTS |
|-----------------|------------|--------------------------------------|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|---------|
|                 |            |                                      | g/yr                 | EF                    |                       |                           |                       |         |
| 878             | 7440-74-6  | Indium & compounds as indium         | 1.76x10 <sup>4</sup> | 0.01                  | 2.44x10 <sup>-5</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE   |
| 878             | 7439-92-1  | Lead                                 | 1.06x10 <sup>4</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE   |
| 878             | 7439-96-5  | Manganese                            | 2.12x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.00                      | 2.36x10 <sup>-3</sup> | FALSE   |
| 878             | 7439-97-6  | Mercury                              | 5.44x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE   |
| 878             | 14808-60-7 | Quartz                               | 8.05x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE   |
| 878             | 7631-86-9  | Silica, fused (respirable)           | 1.29x10 <sup>4</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE   |
| 878             | 7440-22-4  | Silver metal                         | 2.80x10 <sup>4</sup> | 0.00                  | 0.00                  | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | FALSE   |
| 878             | 584-84-9   | Toluene-2,4-diisocyanate             | 5.77x10 <sup>3</sup> | 0.03                  | 2.40x10 <sup>-5</sup> | 3.60x10 <sup>-1</sup>     | 4.25x10 <sup>-4</sup> | FALSE   |
| 878             | 7440-62-2  | Vanadium (fume or dust)              | 4.36x10 <sup>4</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE   |
| 893             | 7784-42-1  | Arsine <sup>a</sup>                  | 1.11x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE   |
| 893             | 7783-07-5  | Hydrogen selenide <sup>a</sup>       | 9.54x10 <sup>4</sup> | 1.50x10 <sup>-2</sup> | 1.99x10 <sup>-4</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE   |
| 893             | 7664-93-9  | Sulfuric acid <sup>a</sup>           | 1.41x10 <sup>5</sup> | 0.033                 | 6.46x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE   |
| MESA            | 7664-41-7  | Ammonia anhydrous <sup>b</sup>       | 1.92x10 <sup>6</sup> | 3.00x10 <sup>-2</sup> | 8.00x10 <sup>-3</sup> | 1.40x10 <sup>2</sup>      | 1.97x10 <sup>-1</sup> | FALSE   |
| MESA            | 7784-42-1  | Arsine <sup>b</sup>                  | 1.34x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.60                      | 2.26x10 <sup>-3</sup> | FALSE   |
| MESA            | 7803-51-2  | Phosphine <sup>b</sup>               | 5.12x10 <sup>4</sup> | 2.00x10 <sup>-1</sup> | 1.42x10 <sup>-3</sup> | 1.40                      | 1.97x10 <sup>-3</sup> | FALSE   |
| MESA            | 7664-93-9  | Sulfuric acid <sup>b</sup>           | 1.56x10 <sup>5</sup> | 2.00x10 <sup>-2</sup> | 4.33x10 <sup>-4</sup> | 1.00x10 <sup>1</sup>      | 1.41x10 <sup>-2</sup> | FALSE   |
| 981             | 7664-93-9  | Sulfuric acid                        | 3.61x10 <sup>5</sup> | 0.00                  | 0.00                  | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE   |

Sources: SNL/NM 1998c, cc

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute noncarcinogenic chemical emissions under the Expanded Operations Alternative.

<sup>b</sup> If Building 893 is not replaced by the MESA Complex configuration, the chemicals listed would not contribute to noncarcinogenic chemical emissions under the Expanded Operations Alternative.

**Table D.1–22. Reduced Operations Alternative  
Noncarcinogenic Chemical Emissions Exceeding the TEV**

| BUILDING NUMBER | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS    | EMISSIONS            |                       | ER (g/sec)            | OEL/100 µg/m <sup>3</sup> | TEV (g/sec)           | RESULT |
|-----------------|------------|---|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
|                 |            |   | g/yr                 | EF                    |                       |                           |                       |        |
| 858             | 7722-84-1  | Hydrogen peroxide (concentration > 52%) | 1.19x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 4.95x10 <sup>-5</sup> | 1.40x10 <sup>1</sup>      | 1.65x10 <sup>-2</sup> | FALSE  |
| 858             | 7697-37-2  | Nitric acid                             | 1.53x10 <sup>6</sup> | 3.00x10 <sup>-4</sup> | 6.36x10 <sup>-5</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 858             | 1310-73-2  | Sodium hydroxide                        | 2.34x10 <sup>7</sup> | 0.00                  | 0.00                  | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 101-77-9   | 4,4'-Methylene dianiline (37%)          | 1.68x10 <sup>5</sup> | 2.4x10 <sup>-3</sup>  | 5.59x10 <sup>-5</sup> | 8.10                      | 9.56x10 <sup>-3</sup> | FALSE  |
| 870             | 1333-82-0  | Chromium Trioxide                       | 8.98x10 <sup>3</sup> | 2.00x10 <sup>-1</sup> | 2.49x10 <sup>-4</sup> | 1.00x10 <sup>2</sup>      | 1.18x10 <sup>-5</sup> | TRUE   |
| 870             | 7440-48-4  | Cobalt (17.4%)                          | 1.04x10 <sup>4</sup> | 1.00x10 <sup>-2</sup> | 1.45x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE  |
| 870             | 111-42-2   | Diethanolamine (85%)                    | 3.05x10 <sup>5</sup> | 2.4x10 <sup>-3</sup>  | 1.02x10 <sup>-4</sup> | 2.00x10 <sup>1</sup>      | 2.36x10 <sup>-2</sup> | FALSE  |
| 870             | 7429-90-5  | Aluminum                                | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 870             | 7440-50-8  | Copper                                  | 6.65x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 9.23x10 <sup>-4</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 870             | 7718-54-9  | Nickel Chloride                         | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-4</sup> | FALSE  |
| 870             | 7786-81-4  | Nickel Sulfate                          | 7.98x10 <sup>5</sup> | 1.79x10 <sup>-6</sup> | 1.98x10 <sup>-7</sup> | 1.50x10 <sup>1</sup>      | 1.77x10 <sup>-4</sup> | FALSE  |
| 870             | 7664-38-2  | Phosphoric Acid                         | 1.10x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 870             | 7631-86-9  | Silica                                  | 9.04x10 <sup>5</sup> | 2.50x10 <sup>-1</sup> | 3.14x10 <sup>-2</sup> | 4.00x10 <sup>1</sup>      | 4.72x10 <sup>-2</sup> | FALSE  |
| 870             | 7664-93-9  | Sulfuric Acid                           | 1.10x10 <sup>5</sup> | 1.00x10 <sup>-2</sup> | 1.53x10 <sup>-3</sup> | 1.00x10 <sup>1</sup>      | 1.18x10 <sup>-2</sup> | FALSE  |
| 878             | 1344-28-1  | Aluminum oxide (fibrous forms)          | 1.67x10 <sup>6</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-2</sup> | FALSE  |
| 878             | 7440-48-4  | Cobalt                                  | 2.02x10 <sup>4</sup> | 0.01                  | 2.80x10 <sup>-5</sup> | 2.00x10 <sup>-1</sup>     | 2.36x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-74-6  | Indium & compounds as In                | 8.80x10 <sup>3</sup> | 1.00x10 <sup>-2</sup> | 1.22x10 <sup>-5</sup> | 1.00                      | 1.18x10 <sup>-3</sup> | FALSE  |
| 878             | 7439-92-1  | Lead                                    | 5.32x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 7439-97-6  | Mercury                                 | 2.72x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.50x10 <sup>-1</sup>     | 2.95x10 <sup>-4</sup> | FALSE  |
| 878             | 7631-86-9  | Silica, fused (respirable)              | 6.46x10 <sup>3</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>1</sup>      | 5.90x10 <sup>-4</sup> | FALSE  |
| 878             | 7440-22-4  | Silver metal                            | 1.40x10 <sup>4</sup> | 0.00                  | 0.00                  | 1.00x10 <sup>-1</sup>     | 1.18x10 <sup>-4</sup> | FALSE  |

**Table D.1–22. Reduced Operations Alternative  
Noncarcinogenic Chemical Emissions Exceeding the TEV (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICALS EXCEEDING SCREENING LEVELS | EMISSIONS            |                       | ER (g/sec)            | OEL/100 µg/m <sup>3</sup> | TEV (g/sec)           | RESULT |
|-----------------|------------|--------------------------------------|----------------------|-----------------------|-----------------------|---------------------------|-----------------------|--------|
|                 |            |                                      | g/yr                 | EF                    |                       |                           |                       |        |
| 878             | 7440-62-2  | Vanadium (fume or dust)              | 2.18x10 <sup>4</sup> | 0.00                  | 0.00                  | 5.00x10 <sup>-1</sup>     | 5.90x10 <sup>-4</sup> | FALSE  |
| 893             | 7784-42-1  | Arsine                               | 5.54x10 <sup>4</sup> | 0.00                  | 0.00                  | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |
| 893             | 7783-07-5  | Hydrogen selenide                    | 4.77x10 <sup>4</sup> | 1.50x10 <sup>-2</sup> | 9.94x10 <sup>-5</sup> | 1.60                      | 1.89x10 <sup>-3</sup> | FALSE  |

Sources: SNL/NM 1998c, cc

### D.1.3.2 Carcinogenic Chemical Screening

The 15 chemicals identified as carcinogenic chemicals are screened according to the following criteria:

For each chemical, a concentration is calculated representing a cancer risk of  $1.0 \times 10^{-8}$  for an exposed individual. This cancer risk represents an incremental cancer risk of one-in-one-million ( $1.0 \times 10^{-6}$ ) (that is, one person in a million would develop cancer if exposed to this concentration over a lifetime), a level of concern established in the *Clean Air Act* (42 U.S.C. §7401). For the purposes of screening, the one-in-one-million cancer risk, is divided by 100 as a conservative safety factor, thereby establishing  $1.0 \times 10^{-8}$  as the cancer risk screening level.

The calculated concentration representing a cancer risk of  $1.0 \times 10^{-8}$  for an exposed individual at the maximum offsite and special receptor location is divided by the annual

average concentration obtained from modeling a 1 gram per second emission rate from the prototypical stack. The annual average concentration is used since the  $1.0 \times 10^{-8}$  risk level represents a long-term exposure risk to an individual. The result is the TEV, an emission rate which results in a concentration with a cancer risk of  $1.0 \times 10^{-8}$ . The TEV is compared to the hypothetical emission rate that is calculated by dividing the purchased quantity by 2,000 hours per year (50 work weeks times 40 hours). Tables D.1–23 through D.1–26 present the results of the carcinogenic chemical screening process comparing the hypothetical emission rate to the TEV representing an emission rate with a  $1.0 \times 10^{-8}$  risk. The tables present 1996 purchases, and No Action Alternative, Expanded Operations Alternative, and Reduced Operations Alternative results, respectively. The word TRUE in the results column indicates that the hypothetical emission rate exceeds the TEV.

**Table D.1–23. 1996 Annual Purchases of Carcinogenic Chemicals Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS            |                       | 10 <sup>-8</sup> RISK LEVEL<br>µg/m <sup>3</sup> | TEV<br>g/sec          | RESULT |
|-----------------|------------|--|----------------------|-----------------------|--|-----------------------|--------|
|                 |            |  | g/yr                 | g/sec                 |  |                       |        |
| 6580            | 67-66-3    | Chloroform (Trichloromethane)            | 5.91x10 <sup>3</sup> | 8.21x10 <sup>-4</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 870             | 71-43-2    | Benzene                                  | 2.36x10 <sup>4</sup> | 3.28x10 <sup>-3</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | TRUE   |
| 870             | 75-09-2    | Dichloromethane (Methylene chloride)     | 6.67x10 <sup>4</sup> | 9.26x10 <sup>-3</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |
| 870             | 7440-02-0  | Nickel (28%)                             | 5.44x10 <sup>3</sup> | 7.56x10 <sup>-4</sup> | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | TRUE   |
| 878             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 2.38x10 <sup>3</sup> | 3.30x10 <sup>-4</sup> | NA   | NA                    | NA     |
| 878             | 107-13-1   | Acrylonitrile                            | 1.00x10 <sup>1</sup> | 1.39x10 <sup>-8</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | FALSE  |
| 878             | 71-43-2    | Benzene                                  | 8.71x10 <sup>1</sup> | 1.21x10 <sup>-5</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 878             | 7440-43-9  | Cadmium                                  | 4.79x10 <sup>2</sup> | 6.65x10 <sup>-5</sup> | 5.56x10 <sup>-6</sup>                            | 1.58x10 <sup>-7</sup> | TRUE   |
| 878             | 75-09-2    | Dichloromethane (Methylene chloride)     | 9.82x10 <sup>4</sup> | 1.36x10 <sup>-2</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |
| 878             | 106-89-8   | Epichlorohydrin                          | 2.23x10 <sup>2</sup> | 3.10x10 <sup>-5</sup> | 8.33x10 <sup>-3</sup>                            | 2.37x10 <sup>-4</sup> | FALSE  |
| 878             | 50-00-0    | Formaldehyde                             | 1.87x10 <sup>4</sup> | 2.60x10 <sup>-3</sup> | 7.41x10 <sup>-4</sup>                            | 2.11x10 <sup>-5</sup> | TRUE   |
| 878             | 7440-02-0  | Nickel                                   | 1.62x10 <sup>4</sup> | 2.26x10 <sup>-3</sup> | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | TRUE   |
| 878             | 79-01-6    | Trichloroethylene                        | 7.49x10 <sup>5</sup> | 1.04x10 <sup>-1</sup> | 5.83x10 <sup>-3</sup>                            | 1.66x10 <sup>-4</sup> | TRUE   |
| 893             | 107-06-2   | 1,2-Dichloroethane (Ethylene dichloride) | 6.27x10 <sup>2</sup> | 8.72x10 <sup>-5</sup> | 3.77x10 <sup>-4</sup>                            | 1.07x10 <sup>-5</sup> | TRUE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                    | 4.90x10 <sup>1</sup> | 6.81x10 <sup>-6</sup> | 3.76x10 <sup>-6</sup>                            | 1.07x10 <sup>-7</sup> | TRUE   |
| 897             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 5.25x10 <sup>1</sup> | 7.29x10 <sup>-6</sup> | NA   | NA                    | NA     |
| 897             | 107-13-1   | Acrylonitrile                            | 7.98x10 <sup>1</sup> | 1.11x10 <sup>-5</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | TRUE   |
| 897             | 71-43-2    | Benzene                                  | 1.08x10 <sup>2</sup> | 1.50x10 <sup>-5</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 897             | 75-25-2    | Bromoform (Tribromomethane)              | 4.95x10 <sup>1</sup> | 6.87x10 <sup>-6</sup> | 9.09x10 <sup>-3</sup>                            | 2.58x10 <sup>-4</sup> | FALSE  |
| 897             | 67-66-3    | Chloroform (Trichloromethane)            | 1.48x10 <sup>4</sup> | 2.05x10 <sup>-3</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 897             | 75-09-2    | Dichloromethane (Methylene chloride)     | 4.25x10 <sup>4</sup> | 5.90x10 <sup>-3</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |

**Table D.1–23. 1996 Annual Purchases of Carcinogenic Chemicals Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                             | EMISSIONS            |                       | 10 <sup>-8</sup> RISK LEVEL µg/m <sup>3</sup> | TEV g/sec             | RESULT |
|-----------------|------------|--------------------------------------|----------------------|-----------------------|---|-----------------------|--------|
|                 |            |                                      | g/yr                 | g/sec                 |   |                       |        |
| 897             | 75-56-9    | Propylene oxide (1,2-Epoxypropane)   | 1.50                 | 2.08x10 <sup>-7</sup> | 2.70x10 <sup>-3</sup>                         | 7.67x10 <sup>-5</sup> | FALSE  |
| 897             | 79-01-6    | Trichloroethylene                    | 2.94x10 <sup>4</sup> | 4.08x10 <sup>-3</sup> | 5.83x10 <sup>-3</sup>                         | 1.66x10 <sup>-4</sup> | TRUE   |
| 905             | 75-09-2    | Dichloromethane (Methylene chloride) | 1.99x10 <sup>4</sup> | 2.76x10 <sup>-3</sup> | 2.13x10 <sup>-2</sup>                         | 6.05x10 <sup>-4</sup> | TRUE   |

<sup>a</sup> NA: 10<sup>-8</sup> risk level screening value not available; carcinogenic chemical screening performed using unit risk factors for inhalation risk. This chemical does not have inhalation toxicity information available. It is listed as an ingestion carcinogen.

**Table D.1–24. Projected Carcinogenic Chemical Emissions  
No Action Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS             |      |                       | 10 <sup>-8</sup> RISK LEVEL<br>μg/m <sup>3</sup> | TEV<br>g/sec          | RESULT |
|-----------------|------------|--|-----------------------|------|-----------------------|--|-----------------------|--------|
|                 |            |  | g/yr                  | EF   | g/sec                 |  |                       |        |
| 6580            | 67-66-3    | Chloroform (Trichloromethane)            | 1.18x10 <sup>4</sup>  | 0.10 | 1.64x10 <sup>-4</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 870             | 71-43-2    | Benzene                                  | 7.98x10 <sup>4</sup>  | 0    | 0                     | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 870             | 75-09-2    | Dichloromethane (Methylene chloride)     | 2.01x10 <sup>5</sup>  | 0.37 | 1.03x10 <sup>-2</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |
| 870             | 7440-02-0  | Nickel (28%)                             | 1.68x10 <sup>4</sup>  | 0    | 0                     | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | FALSE  |
| 878             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 3.56x10 <sup>3</sup>  | 1.00 | 4.95x10 <sup>-4</sup> | NA   | NA                    | NA     |
| 878             | 107-13-1   | Acrylonitrile                            | 1.50x10 <sup>-1</sup> | 1.00 | 2.08x10 <sup>-8</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | FALSE  |
| 878             | 71-43-2    | Benzene                                  | 1.31x10 <sup>2</sup>  | 0.11 | 2.00x10 <sup>-6</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 878             | 7440-43-9  | Cadmium                                  | 7.18x10 <sup>2</sup>  | 0    | 0                     | 5.56x10 <sup>-6</sup>                            | 1.58x10 <sup>-7</sup> | FALSE  |
| 878             | 75-09-2    | Dichloromethane (Methylene chloride)     | 1.47x10 <sup>5</sup>  | 0.03 | 6.14x10 <sup>-4</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |
| 878             | 106-89-8   | Epichlorohydrin                          | 3.35x10 <sup>2</sup>  | 1.00 | 4.66x10 <sup>-5</sup> | 8.33x10 <sup>-3</sup>                            | 2.37x10 <sup>-4</sup> | FALSE  |
| 878             | 50-00-0    | Formaldehyde                             | 2.81x10 <sup>4</sup>  | 0.01 | 3.90x10 <sup>-5</sup> | 7.41x10 <sup>-4</sup>                            | 2.11x10 <sup>-5</sup> | TRUE   |
| 878             | 7440-02-0  | Nickel                                   | 2.44x10 <sup>4</sup>  | 0    | 0                     | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | FALSE  |
| 878             | 79-01-6    | Trichloroethylene                        | 1.12x10 <sup>6</sup>  | 0.02 | 3.12x10 <sup>-3</sup> | 5.83x10 <sup>-3</sup>                            | 1.66x10 <sup>-4</sup> | TRUE   |
| 893             | 107-06-2   | 1,2-Dichloroethane (Ethylene dichloride) | 6.27x10 <sup>2</sup>  | 1.00 | 8.72x10 <sup>-5</sup> | 3.77x10 <sup>-4</sup>                            | 1.07x10 <sup>-5</sup> | TRUE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                    | 4.90x10 <sup>1</sup>  | 1.00 | 6.81x10 <sup>-6</sup> | 3.76x10 <sup>-6</sup>                            | 1.07x10 <sup>-7</sup> | TRUE   |
| 897             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 5.25x10 <sup>1</sup>  | 1.00 | 7.29x10 <sup>-6</sup> | NA   | NA                    | NA     |
| 897             | 107-13-1   | Acrylonitrile                            | 7.98x10 <sup>1</sup>  | 1.00 | 1.11x10 <sup>-5</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | TRUE   |
| 897             | 71-43-2    | Benzene                                  | 1.08x10 <sup>2</sup>  | 0.11 | 1.65x10 <sup>-6</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 897             | 75-25-2    | Bromoform (Tribromomethane)              | 4.95x10 <sup>1</sup>  | 1.00 | 6.87x10 <sup>-6</sup> | 9.09x10 <sup>-3</sup>                            | 2.58x10 <sup>-4</sup> | FALSE  |
| 897             | 67-66-3    | Chloroform (Trichloromethane)            | 1.48x10 <sup>4</sup>  | 0.10 | 2.05x10 <sup>-4</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 897             | 75-09-2    | Dichloromethane (Methylene chloride)     | 4.25x10 <sup>4</sup>  | 0.05 | 2.95x10 <sup>-4</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | FALSE  |
| 897             | 75-56-9    | Propylene oxide (1,2-Epoxypropane)       | 1.50                  | 1.00 | 2.08x10 <sup>-7</sup> | 2.70x10 <sup>-3</sup>                            | 7.67x10 <sup>-5</sup> | FALSE  |

**Table D.1–24. Projected Carcinogenic Chemical Emissions  
No Action Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                             | EMISSIONS          |      |                       | $10^{-8}$ RISK LEVEL<br>$\mu\text{g}/\text{m}^3$ | TEV<br>$\text{g}/\text{sec}$ | RESULT |
|-----------------|------------|--------------------------------------|--------------------|------|-----------------------|--|------------------------------|--------|
|                 |            |                                      | g/yr               | EF   | g/sec                 |  |                              |        |
| 897             | 79-01-6    | Trichloroethylene                    | $2.94 \times 10^4$ | 0.07 | $2.86 \times 10^{-4}$ | $5.83 \times 10^{-3}$                            | $1.66 \times 10^{-4}$        | TRUE   |
| 905             | 75-09-2    | Dichloromethane (Methylene chloride) | $3.98 \times 10^4$ | 0.02 | $1.11 \times 10^{-4}$ | $2.13 \times 10^{-2}$                            | $6.05 \times 10^{-4}$        | FALSE  |

<sup>a</sup> NA:  $10^{-8}$  risk level screening value not available; carcinogenic chemical screening performed using unit risk factors for inhalation risk. This chemical does not have inhalation toxicity information available. It is listed as an ingestion carcinogen.

**Table D.1–25. Projected Carcinogenic Chemical Emissions  
Expanded Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL  | EMISSIONS             |                       | EMISSION RATE<br>g/sec | $10^{-8}$ RISK LEVEL<br>$\mu\text{g}/\text{m}^3$ | TEV<br>g/sec          | RESULT |
|-----------------|------------|---|-----------------------|-----------------------|------------------------|--|-----------------------|--------|
|                 |            |   | g/yr                  | EF                    |                        |  |                       |        |
| 6580            | 67-66-3    | Chloroform (Trichloromethane)                         | $8.87 \times 10^3$    | $1.00 \times 10^{-1}$ | $1.23 \times 10^{-4}$  | $4.35 \times 10^{-4}$                            | $1.24 \times 10^{-5}$ | TRUE   |
| 870             | 71-43-2    | Benzene   | $7.98 \times 10^4$    | 0.00                  | 0.00                   | $1.20 \times 10^{-3}$                            | $3.41 \times 10^{-5}$ | FALSE  |
| 870             | 75-09-2    | Dichloromethane (Methylene chloride)                  | $2.01 \times 10^5$    | $3.70 \times 10^{-1}$ | $1.03 \times 10^{-2}$  | $2.13 \times 10^{-2}$                            | $6.05 \times 10^{-4}$ | TRUE   |
| 870             | 7440-02-0  | Nickel (28%)  | $1.68 \times 10^4$    | 0.00                  | 0.00                   | $2.06 \times 10^{-5}$                            | $5.85 \times 10^{-7}$ | FALSE  |
| 878             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                              | $4.75 \times 10^3$    | 1.00                  | $6.60 \times 10^{-4}$  | NA   | NA                    | NA     |
| 878             | 107-13-1   | Acrylonitrile   | $2.00 \times 10^{-1}$ | 1.00                  | $2.78 \times 10^{-8}$  | $1.47 \times 10^{-4}$                            | $4.18 \times 10^{-6}$ | FALSE  |
| 878             | 71-43-2    | Benzene   | $1.74 \times 10^2$    | $1.10 \times 10^{-1}$ | $2.66 \times 10^{-6}$  | $1.20 \times 10^{-3}$                            | $3.41 \times 10^{-5}$ | FALSE  |
| 878             | 7440-43-9  | Cadmium   | $9.57 \times 10^2$    | 0.00                  | 0.00                   | $5.56 \times 10^{-6}$                            | $1.58 \times 10^{-7}$ | FALSE  |
| 878             | 75-09-2    | Dichloromethane (Methylene chloride)                  | $1.96 \times 10^5$    | $3.00 \times 10^{-2}$ | $8.19 \times 10^{-4}$  | $2.13 \times 10^{-2}$                            | $6.05 \times 10^{-4}$ | TRUE   |
| 878             | 106-89-8   | Epichlorohydrin                                       | $4.47 \times 10^2$    | 1.00                  | $6.21 \times 10^{-5}$  | $8.33 \times 10^{-3}$                            | $2.37 \times 10^{-4}$ | FALSE  |
| 878             | 50-00-0    | Formaldehyde  | $3.74 \times 10^4$    | $1.00 \times 10^{-2}$ | $5.19 \times 10^{-5}$  | $7.41 \times 10^{-4}$                            | $2.11 \times 10^{-5}$ | TRUE   |
| 878             | 7440-02-0  | Nickel  | $3.25 \times 10^4$    | 0.00                  | 0.00                   | $2.06 \times 10^{-5}$                            | $5.85 \times 10^{-7}$ | FALSE  |
| 878             | 79-01-6    | Trichloroethylene                                     | $1.50 \times 10^6$    | $2.00 \times 10^{-2}$ | $4.16 \times 10^{-3}$  | $5.83 \times 10^{-3}$                            | $1.66 \times 10^{-4}$ | TRUE   |
| 893             | 107-06-2   | 1,2-Dichloroethane (Ethylene dichloride) <sup>a</sup> | $1.25 \times 10^3$    | 1.00                  | $1.74 \times 10^{-4}$  | $3.77 \times 10^{-4}$                            | $1.07 \times 10^{-5}$ | TRUE   |
| MESA            | 71-43-2    | Benzene <sup>b</sup>                                  | 3.32                  | 1.00                  | $4.61 \times 10^{-7}$  | $1.20 \times 10^{-3}$                            | $3.69 \times 10^{-5}$ | TRUE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                                 | $4.90 \times 10^1$    | 1.00                  | $6.81 \times 10^{-6}$  | $3.76 \times 10^{-6}$                            | $1.07 \times 10^{-7}$ | TRUE   |
| 897             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                              | $5.25 \times 10^1$    | 1.00                  | $7.29 \times 10^{-6}$  | NA   | NA                    | NA     |
| 897             | 107-13-1   | Acrylonitrile   | $7.98 \times 10^1$    | 1.00                  | $1.11 \times 10^{-5}$  | $1.47 \times 10^{-4}$                            | $4.18 \times 10^{-6}$ | TRUE   |
| 897             | 71-43-2    | Benzene   | $1.08 \times 10^2$    | $1.10 \times 10^{-1}$ | $1.65 \times 10^{-6}$  | $1.20 \times 10^{-3}$                            | $3.41 \times 10^{-5}$ | FALSE  |
| 897             | 75-25-2    | Bromoform (Tribromomethane)                           | $4.95 \times 10^1$    | 1.00                  | $6.87 \times 10^{-6}$  | $9.09 \times 10^{-3}$                            | $2.58 \times 10^{-4}$ | FALSE  |
| 897             | 67-66-3    | Chloroform (Trichloromethane)                         | $1.48 \times 10^4$    | $1.00 \times 10^{-1}$ | $2.05 \times 10^{-4}$  | $4.35 \times 10^{-4}$                            | $1.24 \times 10^{-5}$ | TRUE   |

**Table D.1–25. Projected Carcinogenic Chemical Emissions  
Expanded Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                             | EMISSIONS          |                       | EMISSION RATE<br>g/sec | $10^{-8}$ RISK LEVEL<br>$\mu\text{g}/\text{m}^3$ | TEV<br>g/sec          | RESULT |
|-----------------|------------|--------------------------------------|--------------------|-----------------------|------------------------|--|-----------------------|--------|
|                 |            |                                      | g/yr               | EF                    |                        |  |                       |        |
| 897             | 75-09-2    | Dichloromethane (Methylene chloride) | $4.25 \times 10^4$ | $5.00 \times 10^{-2}$ | $2.95 \times 10^{-4}$  | $2.13 \times 10^{-2}$                            | $6.05 \times 10^{-4}$ | FALSE  |
| 897             | 75-56-9    | Propylene oxide (1,2-Epoxypropane)   | 1.50               | 1.00                  | $2.08 \times 10^{-7}$  | $2.70 \times 10^{-3}$                            | $7.67 \times 10^{-5}$ | FALSE  |
| 897             | 79-01-6    | Trichloroethylene                    | $2.94 \times 10^4$ | $7.00 \times 10^{-2}$ | $2.86 \times 10^{-4}$  | $5.83 \times 10^{-3}$                            | $1.66 \times 10^{-4}$ | TRUE   |
| 905             | 75-09-2    | Dichloromethane (Methylene chloride) | $3.98 \times 10^4$ | $2.00 \times 10^{-2}$ | $1.11 \times 10^{-4}$  | $2.13 \times 10^{-2}$                            | $6.05 \times 10^{-4}$ | FALSE  |

MESA: Microsystems and Engineering Sciences Applications

<sup>a</sup> NA:  $10^{-8}$  risk level screening value not available; carcinogenic chemical screening performed using unit risk factors for inhalation risk. This chemical does not have inhalation toxicity information available. It is listed as an ingestion carcinogen.

<sup>b</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemicals listed would no longer contribute carcinogenic chemical emissions under the Expanded Operations Alternative.

<sup>c</sup> If Building 893 is not replaced by the MESA Complex configuration, the chemical listed would not contribute to carcinogenic chemical emissions under the Expanded Operations Alternative.

**Table D.1–26. Projected Carcinogenic Chemical Emissions  
Reduced Operations Alternative Screening Level Analysis**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                                 | EMISSIONS            |                       |                       | 10 <sup>-8</sup> RISK LEVEL<br>μg/m <sup>3</sup> | TEV<br>g/sec          | RESULT |
|-----------------|------------|--|----------------------|-----------------------|-----------------------|--|-----------------------|--------|
|                 |            |  | g/yr                 | EF                    | g/sec                 |  |                       |        |
| 6580            | 67-66-3    | Chloroform (Trichloromethane)            | 1.48x10 <sup>3</sup> | 1.00x10 <sup>-1</sup> | 2.05x10 <sup>-5</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 870             | 71-43-2    | Benzene                                  | 7.98x10 <sup>4</sup> | 0.00                  | 0.00                  | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 870             | 75-09-2    | Dichloromethane (Methylene chloride)     | 2.01x10 <sup>5</sup> | 3.70x10 <sup>-1</sup> | 1.03x10 <sup>-2</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | TRUE   |
| 870             | 7440-02-0  | Nickel (28%)                             | 1.68x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | FALSE  |
| 878             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 2.38x10 <sup>3</sup> | 1.00                  | 3.30x10 <sup>-4</sup> | NA   | NA                    | NA     |
| 878             | 107-13-1   | Acrylonitrile                            | 1.00x10 <sup>1</sup> | 1.00                  | 1.39x10 <sup>-8</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | FALSE  |
| 878             | 71-43-2    | Benzene                                  | 8.71x10 <sup>1</sup> | 1.10x10 <sup>-1</sup> | 1.33x10 <sup>-6</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 878             | 7440-43-9  | Cadmium                                  | 4.79x10 <sup>2</sup> | 0.00                  | 0.00                  | 5.56x10 <sup>-6</sup>                            | 1.58x10 <sup>-7</sup> | FALSE  |
| 878             | 75-09-2    | Dichloromethane (Methylene chloride)     | 9.82x10 <sup>4</sup> | 3.00x10 <sup>-2</sup> | 4.09x10 <sup>-4</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | FALSE  |
| 878             | 106-89-8   | Epichlorohydrin                          | 2.23x10 <sup>2</sup> | 1.00                  | 3.10x10 <sup>-5</sup> | 8.33x10 <sup>-3</sup>                            | 2.37x10 <sup>-4</sup> | FALSE  |
| 878             | 50-00-0    | Formaldehyde                             | 1.87x10 <sup>4</sup> | 1.00x10 <sup>-2</sup> | 2.60x10 <sup>-5</sup> | 7.41x10 <sup>-4</sup>                            | 2.11x10 <sup>-5</sup> | TRUE   |
| 878             | 7440-02-0  | Nickel                                   | 1.62x10 <sup>4</sup> | 0.00                  | 0.00                  | 2.06x10 <sup>-5</sup>                            | 5.85x10 <sup>-7</sup> | FALSE  |
| 878             | 79-01-6    | Trichloroethylene                        | 7.49x10 <sup>5</sup> | 2.00x10 <sup>-2</sup> | 2.08x10 <sup>-3</sup> | 5.83x10 <sup>-3</sup>                            | 1.66x10 <sup>-4</sup> | TRUE   |
| 893             | 107-06-2   | 1,2-Dichloroethane (Ethylene dichloride) | 6.27x10 <sup>2</sup> | 1.00                  | 8.72x10 <sup>-5</sup> | 3.77x10 <sup>-4</sup>                            | 1.07x10 <sup>-5</sup> | TRUE   |
| 897             | 764-41-0   | 1,4-Dichloro-2-butene                    | 4.51x10 <sup>1</sup> | 1.00                  | 6.26x10 <sup>-6</sup> | 3.76x10 <sup>-6</sup>                            | 1.07x10 <sup>-7</sup> | TRUE   |
| 897             | 123-91-1   | 1,4-Dioxane <sup>a</sup>                 | 4.83x10 <sup>1</sup> | 1.00                  | 6.71x10 <sup>-6</sup> | NA   | NA                    | NA     |
| 897             | 107-13-1   | Acrylonitrile                            | 7.34x10 <sup>1</sup> | 1.00                  | 1.02x10 <sup>-5</sup> | 1.47x10 <sup>-4</sup>                            | 4.18x10 <sup>-6</sup> | TRUE   |
| 897             | 71-43-2    | Benzene                                  | 9.93x10 <sup>1</sup> | 1.10x10 <sup>-1</sup> | 1.52x10 <sup>-6</sup> | 1.20x10 <sup>-3</sup>                            | 3.41x10 <sup>-5</sup> | FALSE  |
| 897             | 75-25-2    | Bromoform (Tribromomethane)              | 4.55x10 <sup>1</sup> | 1.00                  | 6.32x10 <sup>-6</sup> | 9.09x10 <sup>-3</sup>                            | 2.58x10 <sup>-4</sup> | FALSE  |
| 897             | 67-66-3    | Chloroform (Trichloromethane)            | 1.36x10 <sup>4</sup> | 1.00x10 <sup>-1</sup> | 1.89x10 <sup>-4</sup> | 4.35x10 <sup>-4</sup>                            | 1.24x10 <sup>-5</sup> | TRUE   |
| 897             | 75-09-2    | Dichloromethane (Methylene chloride)     | 3.91x10 <sup>4</sup> | 5.00x10 <sup>-2</sup> | 2.71x10 <sup>-4</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | FALSE  |
| 897             | 75-56-9    | Propylene oxide (1,2-Epoxypropane)       | 1.38                 | 1.00                  | 1.92x10 <sup>-7</sup> | 2.70x10 <sup>-3</sup>                            | 7.67x10 <sup>-5</sup> | FALSE  |

**Table D.1–26. Projected Carcinogenic Chemical Emissions  
Reduced Operations Alternative Screening Level Analysis (concluded)**

| BUILDING NUMBER | CAS NUMBER | CHEMICAL                             | EMISSIONS            |                       |                       | 10 <sup>-8</sup> RISK LEVEL<br>μg/m <sup>3</sup> | TEV<br>g/sec          | RESULT |
|-----------------|------------|--------------------------------------|----------------------|-----------------------|-----------------------|--|-----------------------|--------|
|                 |            |                                      | g/yr                 | EF                    | g/sec                 |  |                       |        |
| 897             | 79-01-6    | Trichloroethylene                    | 2.70x10 <sup>4</sup> | 7.00x10 <sup>-2</sup> | 2.63x10 <sup>-4</sup> | 5.83x10 <sup>-3</sup>                            | 1.66x10 <sup>-4</sup> | TRUE   |
| 905             | 75-09-2    | Dichloromethane (Methylene chloride) | 3.98x10 <sup>3</sup> | 2.00x10 <sup>-2</sup> | 1.11x10 <sup>-5</sup> | 2.13x10 <sup>-2</sup>                            | 6.05x10 <sup>-4</sup> | FALSE  |

<sup>a</sup> NA: 10<sup>-8</sup> risk level screening value not available; carcinogenic chemical screening performed using unit risk factors for inhalation risk. This chemical does not have inhalation toxicity information available. It is listed as an ingestion carcinogen.

For those chemicals with a hypothetical emission rate greater than the TEV, additional process engineering estimates of chemical emissions are requested from the respective facilities. Those carcinogenic chemicals whose process engineering estimated emission rates still exceed the TEV are modeled

using the process engineering chemical emissions for the building from which emissions occur to determine maximum offsite chemical concentrations and concentrations at public access areas (such as the National Atomic Museum, hospitals, and schools). Tables D.1–27, D.1–28, and D.1–29 present

**Table D.1–27. No Action Alternative Carcinogenic Chemical Emissions Exceeding Screening Levels**

| CHEMICALS EXCEEDING SCREENING LEVELS            | BUILDING SOURCE | EMISSION RATE (g/sec) | TEV (g/sec)           |
|---|-----------------|-----------------------|-----------------------|
| <i>Chloroform (trichloromethane)</i>            | 6580            | $1.64 \times 10^{-5}$ | $1.24 \times 10^{-5}$ |
| <i>Dichloromethane (Methylene chloride)</i>     | 870             | $1.03 \times 10^{-2}$ | $6.05 \times 10^{-4}$ |
| <i>Dichloromethane (Methylene chloride)</i>     | 878             | $6.14 \times 10^{-4}$ | $6.05 \times 10^{-4}$ |
| <i>Formaldehyde</i>                             | 878             | $3.90 \times 10^{-5}$ | $2.11 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                        | 878             | $3.12 \times 10^{-3}$ | $1.66 \times 10^{-4}$ |
| <i>1,2-Dichloroethane (Ethylene dichloride)</i> | 893             | $8.72 \times 10^{-5}$ | $1.07 \times 10^{-5}$ |
| <i>1,4-Dichloro-2-butene</i>                    | 897             | $6.81 \times 10^{-6}$ | $1.07 \times 10^{-7}$ |
| <i>Acrylonitrile</i>                            | 897             | $1.11 \times 10^{-5}$ | $4.18 \times 10^{-6}$ |
| <i>Chloroform (trichloromethane)</i>            | 897             | $2.05 \times 10^{-5}$ | $1.24 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                        | 897             | $2.86 \times 10^{-4}$ | $1.66 \times 10^{-4}$ |

Source: SNL/NM 1998a

g/sec: grams per second

TEV: threshold emission value

Bldg. 6580 – Hot Cell Facility (HCF)

Bldg. 870 – Neutron Generator Facility (NGF)

Bldg. 878 – Advanced Manufacturing Processes Laboratory (AMPL)

Bldg. 893 – Compound Semiconductor Research Laboratory (CSRL)

Bldg. 897 – Integrated Materials Research Laboratory (IMRL)

**Table D.1–28. Expanded Operations Alternative Carcinogenic Chemical Emissions Exceeding Screening Levels**

| CHEMICALS EXCEEDING SCREENING LEVELS                         | BUILDING SOURCE | EMISSION RATE (g/sec) | TEV (g/sec)           |
|--|-----------------|-----------------------|-----------------------|
| <i>Chloroform (trichloromethane)</i>                         | 6580            | $1.23 \times 10^{-5}$ | $1.24 \times 10^{-5}$ |
| <i>Dichloromethane (Methylene chloride)</i>                  | 870             | $1.03 \times 10^{-2}$ | $6.05 \times 10^{-4}$ |
| <i>Dichloromethane (Methylene chloride)</i>                  | 878             | $8.19 \times 10^{-4}$ | $6.05 \times 10^{-4}$ |
| <i>Formaldehyde</i>  | 878             | $5.19 \times 10^{-5}$ | $2.11 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                                     | 878             | $4.16 \times 10^{-3}$ | $1.66 \times 10^{-4}$ |
| <i>1,2-Dichloroethane (Ethylene dichloride)</i> <sup>a</sup> | 893             | $1.74 \times 10^{-4}$ | $1.07 \times 10^{-5}$ |
| <i>1,4-Dichloro-2-butene</i>                                 | 897             | $6.81 \times 10^{-6}$ | $1.07 \times 10^{-7}$ |
| <i>Acrylonitrile</i>   | 897             | $1.11 \times 10^{-5}$ | $4.18 \times 10^{-6}$ |
| <i>Chloroform (trichloromethane)</i>                         | 897             | $2.05 \times 10^{-5}$ | $1.24 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                                     | 897             | $2.86 \times 10^{-4}$ | $1.66 \times 10^{-4}$ |

Source: SNL/NM 1998a

g/sec: grams per second

TEV: threshold emission value

MESA: Microsystems and Engineering Sciences Applications

Bldg. 6580 – Hot Cell Facility (HCF)

Bldg. 870 – Neutron Generator Facility (NGF)

Bldg. 878 – Advanced Manufacturing Processes Laboratory (AMPL)

Bldg. 893 – Compound Semiconductor Research Laboratory (CSRL)

Bldg. 897 – Integrated Materials Research Laboratory (IMRL)

<sup>a</sup> If the MESA Complex configuration is implemented, Building 893 would cease operations (after 2003) and the chemical listed would no longer contribute carcinogenic chemical emissions under the Expanded Operations Alternative.

**Table D.1–29. Reduced Operations Alternative Carcinogenic Chemical Emissions Exceeding Screening Levels**

| CHEMICALS EXCEEDING SCREENING LEVELS            | BUILDING SOURCE | EMISSION RATE (g/sec) | TEV (g/sec)           |
|---|-----------------|-----------------------|-----------------------|
| <i>Chloroform (trichloromethane)</i>            | 6580            | $2.05 \times 10^{-5}$ | $1.24 \times 10^{-5}$ |
| <i>Dichloromethane (Methylene chloride)</i>     | 870             | $1.03 \times 10^{-2}$ | $6.05 \times 10^{-4}$ |
| <i>Formaldehyde</i>                             | 878             | $2.60 \times 10^{-5}$ | $2.11 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                        | 878             | $2.08 \times 10^{-3}$ | $1.66 \times 10^{-4}$ |
| <i>1,2-Dichloroethane (Ethylene dichloride)</i> | 893             | $8.72 \times 10^{-5}$ | $1.07 \times 10^{-5}$ |
| <i>1,4-Dichloro-2-butene</i>                    | 897             | $6.26 \times 10^{-6}$ | $1.07 \times 10^{-7}$ |
| <i>Acrylonitrile</i>                            | 897             | $1.02 \times 10^{-5}$ | $4.18 \times 10^{-6}$ |
| <i>Chloroform (trichloromethane)</i>            | 897             | $1.89 \times 10^{-4}$ | $1.24 \times 10^{-5}$ |
| <i>Trichloroethylene</i>                        | 897             | $2.63 \times 10^{-4}$ | $1.66 \times 10^{-4}$ |

Source: SNL/NM 1998a

g/sec: grams per second

TEV: threshold emission value

Bldg. 6580 – Hot Cell Facility (HCF)

Bldg. 870 – Neutron Generator Facility (NGF)

Bldg. 878 – Advanced Manufacturing Processes Laboratory (AMPL)

Bldg. 893 – Compound Semiconductor Research Laboratory (CSRL)

Bldg. 897 – Integrated Materials Research Laboratory (IMRL)

the No Action Alternative, Expanded Operations Alternative, and Reduced Operations Alternative results of the final screening step for the carcinogenic chemicals comparing emission rates derived from process engineering estimates to the TEV. The process engineering estimates are emission factors based upon facility process knowledge applicable to each of the chemical emissions. Concentrations of the carcinogenic chemicals based upon the process engineering emission rates are evaluated in the Human Health and Worker Safety section. (Section 5.3.8)

#### D.1.4 Mobile Sources

Mobile source emissions were calculated for each alternative based on estimated vehicle commuter traffic and onsite vehicle usage. The EPA model *MOBILE 5a* was used to estimate mobile source emission factors based on vehicular profiles input into the model. These factors were then used to calculate the emissions of carbon monoxide from SNL/NM vehicular traffic. It is assumed that the vehicle carbon monoxide emission factor is 33.4 g per mi in the base year (1996) and is reduced to 28.5 g per mi for the alternatives (2005). Future vehicles will have inherently lower emission rates and more stringent inspection programs, causing the lower rates to be maintained. This is consistent with the input parameters used by the city of Albuquerque Environmental Health Department, Air Pollution

Control Division in *MOBILE5A* to determine vehicle carbon monoxide for Bernalillo county (SNL 1996c). Table D.1–30 presents the emission factors, assumptions, and calculations used to estimate the carbon monoxide contribution from SNL/NM vehicular traffic for the proposed alternatives. Figure D.1–5 presents the process used for evaluating mobile source emissions from SNL/NM commuter traffic.

The contributions of carbon monoxide emissions from vehicles commuting to and from SNL/NM and from SNL/NM-operated, on-base vehicles as a percent of the total county carbon monoxide emissions are: No Action Alternative, 4.6 percent; Expanded Operations Alternative, 5.1 percent; and Reduced Operations Alternative, 4.5 percent. There is no increase of carbon monoxide emissions from vehicular traffic for any alternative above the baseline emissions. Rather, the annual emissions would be reduced by 250 tons under the Expanded Operations Alternative due to improvements in vehicle fleet emissions.

The following is a partial list defining input parameters for *MOBILE5A*, which were used to calculate vehicular carbon monoxide emission rates due to SNL/NM commuters:

- Tampering rates—the rates at which people are expected to make changes to vehicle pollution control devices.

**Table D.1–30. Estimated Carbon Monoxide Emissions from SNL/NM**

| COMMUTER   | ONBASE                          | PARAMETER  |
|--|---------------------------------|--|
| <b>1996 BASELINE</b>   |                                 |  |
| 13,582.0   | 600.0                           | SNL/NM vehicles per day                              |
| <u>x 30.0</u>  | <u>x 30.0</u>                   | Miles per day per vehicle                            |
| 407,460.0  | 18,000.0                        | Total miles per day                                  |
| <u>x 33.4</u>  | <u>x 33.4</u>                   | Emission factor (grams per mile)                     |
| 13,609,164.0   | 601,200.0                       | Carbon monoxide emissions (grams per day)            |
| <u>x 1.1023x10<sup>-6</sup></u>  | <u>x 1.1023x10<sup>-6</sup></u> | Conversion factor: grams to tons                     |
| 15.0   | 0.66                            | Carbon monoxide emissions (tons per day)             |
| <u>x 261.0</u>   | <u>x 261.0</u>                  | Working days per year                                |
| 3,915.0  | 172.0                           | Carbon monoxide emissions (tons per year)            |
| <b>3,915.0</b>   | <b>+ 172.0</b>                  | <b>= 4,087</b> Total carbon monoxide (tons per year) |
| Assumptions: Emission factor for the year 1996 assumed.  |                                 |  |
| <b>NO ACTION ALTERNATIVE</b>   |                                 |  |
| 13,582.0   | 600.0                           | SNL/NM vehicles per day                              |
| <u>x 30.0</u>  | <u>x 30.0</u>                   | Miles per day per vehicle                            |
| 407,460.0  | 18,000.0                        | Total miles per day                                  |
| <u>x 28.5</u>  | <u>x 28.5</u>                   | Emission factor (grams per mile)                     |
| 11,612,610.0   | 513,000.0                       | Carbon monoxide emissions (grams per day)            |
| <u>x 1.1023x10<sup>-6</sup></u>  | <u>x 1.1023x10<sup>-6</sup></u> | Conversion factor: grams to tons                     |
| 12.8   | 0.57                            | Carbon monoxide emissions (tons per day)             |
| <u>x 261.0</u>   | <u>x 261.0</u>                  | Working days per year                                |
| 3,341.0  | 148.0                           | Carbon monoxide emissions (tons per year)            |
| <b>3,341.0</b>   | <b>+ 148.0</b>                  | <b>= 3,489</b> Total carbon monoxide (tons per year) |
| Assumptions: Emission factor for the year 2005 assumed.  |                                 |  |
| <b>EXPANDED OPERATIONS ALTERNATIVE</b>   |                                 |  |
| 14,940.0   | 660.0                           | SNL/NM vehicles per day                              |
| <u>x 30.0</u>  | <u>x 30.0</u>                   | Miles per day per vehicle                            |
| 448,200.0  | 19,800.0                        | Total miles per day                                  |
| <u>x 28.5</u>  | <u>x 28.5</u>                   | Emission factor (grams per mile)                     |
| 12,773,700.0   | 564,300.0                       | Carbon monoxide emissions (grams per day)            |
| <u>x 1.1023x10<sup>-6</sup></u>  | <u>x 1.1023x10<sup>-6</sup></u> | Conversion factor: grams to tons                     |
| 14.08  | 0.622                           | Carbon monoxide emissions (tons per day)             |
| <u>x 261.0</u>   | <u>x 261.0</u>                  | Working days per year                                |
| 3,674.88   | 162.35                          | Carbon monoxide emissions (tons per year)            |
| <b>3,674.88</b>  | <b>+ 162.35</b>                 | <b>= 3,837</b> Total carbon monoxide (tons per year) |
| Assumptions: Emission factor for the year 2005 assumed; a 10 percent increase in vehicles per day from 1995 assumed. |                                 |  |

**Table D.1–30. Estimated Carbon Monoxide Emissions from SNL/NM (concluded)**

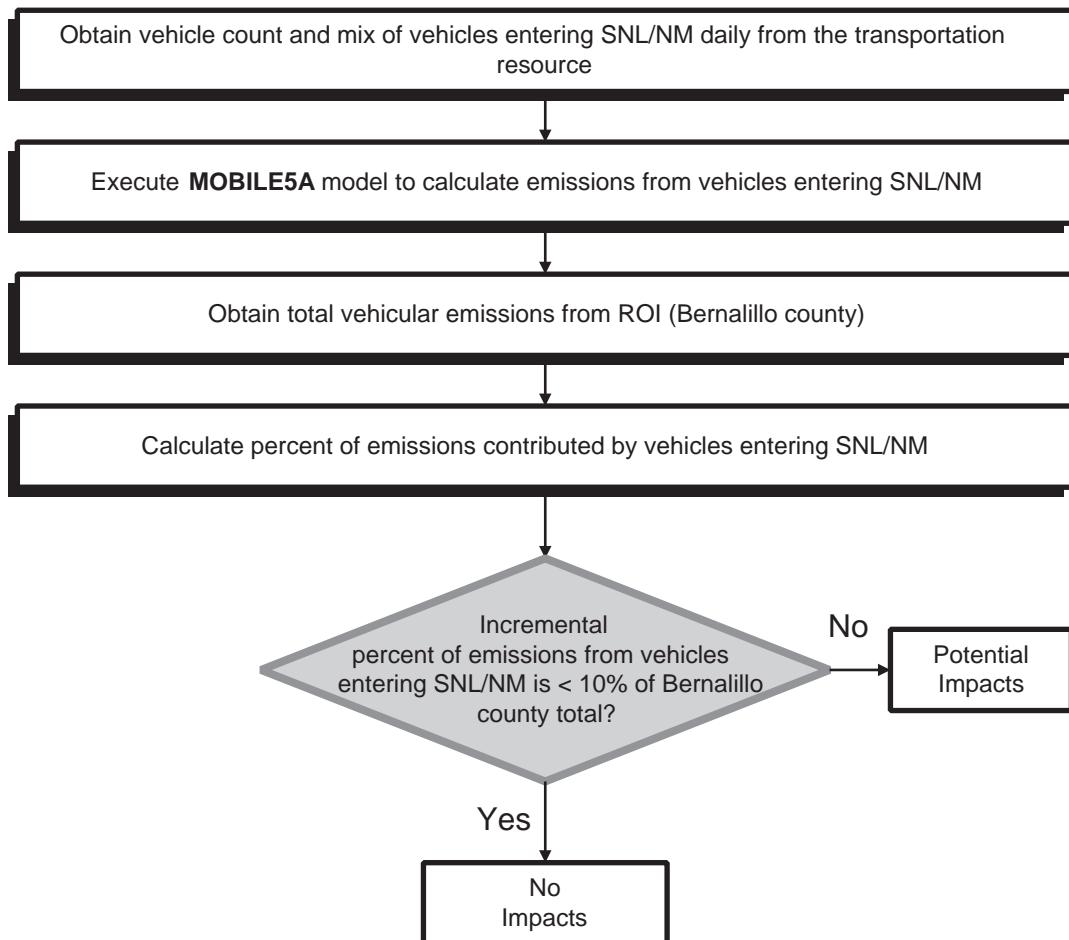
| COMMUTER                                     | ONBASE                                    | PARAMETER  |
|--|---|--|
| <b><i>REDUCED OPERATIONS ALTERNATIVE</i></b> |   |  |
| 13,175.0<br><u>x 30.0</u><br>395,250.0       | 582.0<br><u>x 30.0</u><br>17,460.0        | SNL/NM vehicles per day<br>Miles per day per vehicle<br>Total miles per day      |
| <u>x 28.5</u><br>11,264,625.0                | <u>x 28.5</u><br>497,610.0                | Emission factor (grams per mile)<br>Carbon monoxide emissions<br>(grams per day) |
| <u>x 1.1023x10<sup>-6</sup></u><br>12.42     | <u>x 1.1023x10<sup>-6</sup></u><br>0.5485 | Conversion factor: grams to tons<br>Carbon monoxide emissions (tons per day)     |
| <u>x 261.0</u><br>3,241.60                   | <u>x 261.0</u><br>143.16                  | Working days per year<br>Carbon monoxide emissions (tons per year)               |
| <b>3,241.60</b>                              | <b>+ 143.16 = 3,385</b>                   | Total carbon monoxide (tons per year)  |

Assumptions: Emission factor for the year 2005 assumed; a 3 percent decrease in vehicles per day from 1995 assumed.

Source: SNL 1996c

### Mobile Sources (Vehicles)

Objective: Determine if emissions from vehicles entering SNL/NM contribute a small percentage of the total emissions of the Region of Influence (ROI) (Bernalillo county)



Source: Original

**Figure D.1–5. Flow Chart for Evaluation of Mobile Source Emissions**

*Various data are input into the MOBILE5A computer model to measure mobile source carbon monoxide emissions from SNL/NM commuters versus Bernalillo County mobile source carbon monoxide emissions.*

- Average speed—average speed of vehicles.
- Vehicle miles traveled mix—the mix of vehicle types used in the analysis.
- Mileage accumulation rates by model year—the default is the national average annual milage accumulation rates and registration distribution by model year.
- Adjustment for exhaust emission rates—adjustment by vehicle model year.
- Inspection and Maintenance Program—requires entries to define the characteristics of one or more inspection and maintenance programs.
- Adjustment for load—entries to make allowance for air conditioner usage, load, trailers, and humidity.
- Anti-tampering program—entries to define an anti-tampering program, if applicable.
- Reformulated gasoline—the model does not take into account any “at the pump” vapor recovery systems since these do not affect carbon monoxide emission factors.
- Average minimum and maximum daily temperatures—input parameter includes minimum and maximum daily temperatures and volatility class of fuel.
- Idle emissions—the calculation of idle emissions has been disabled in *MOBILE5A*.

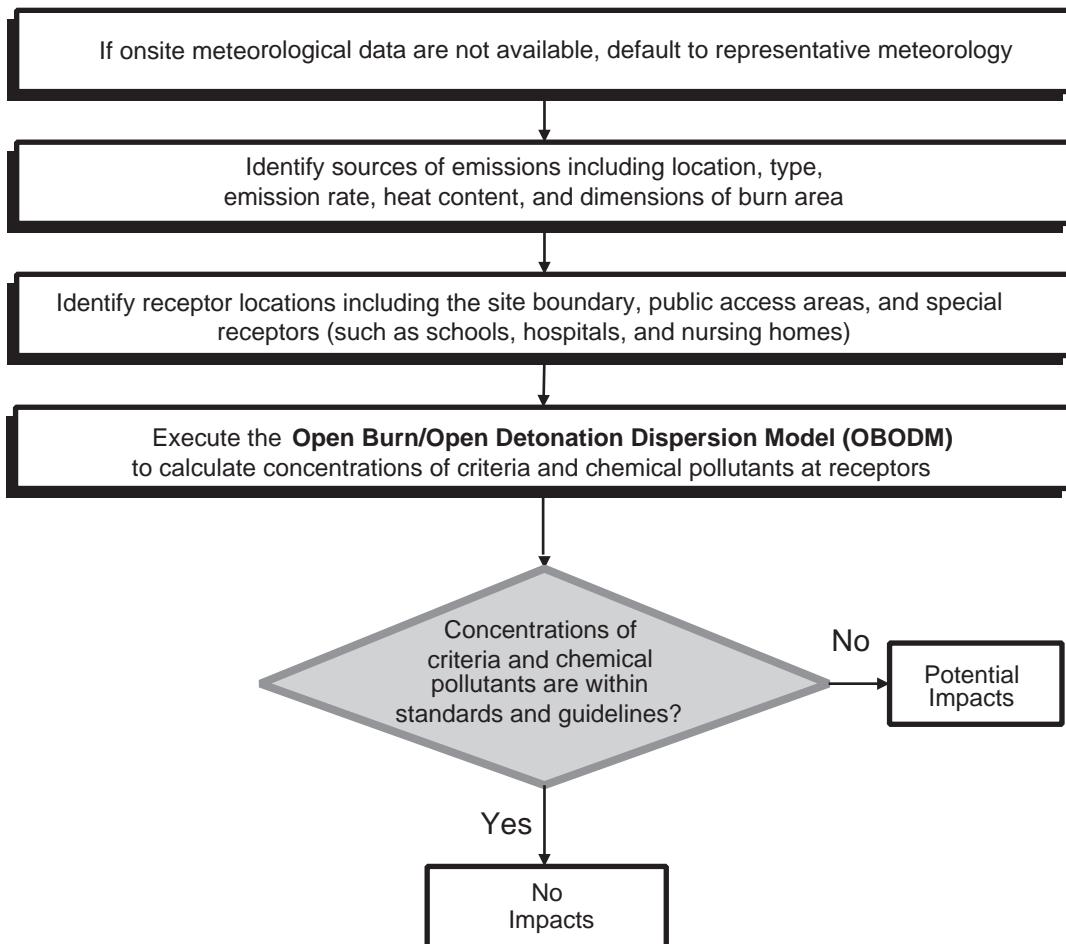
Based upon the analysis of stationary and mobile source emissions for carbon monoxide, even under the Expanded Operations Alternative, carbon monoxide emissions from SNL/NM would be less than the 1996 emissions. Therefore, there is no need for a “conformity analysis.”

#### D.1.5 Fire Testing Facility

Figure D.1–6 presents the process used for evaluating emissions from fire testing facilities. Table D.1–31 presents the 89 chemical pollutants, applicable OEL/100 guidelines, and the respective 8-hour average concentrations at the KAFB boundary from burning 1,000 gallons of JP-8 fuel at the open burn pools located in Lurance Canyon. Historically, the number of burns in a day varies from none to multiple. However, the maximum amount burned in a single day has been and is projected to be, 1,000 gal. The 1-hour pollutant concentrations were estimated using the model *OBODM*. These 1-hour concentrations were converted to 8-hour average concentrations and compared to 1/100th of the American Conference of Governmental Industrial Hygienists (ACGIH) 8-hour exposure standard (OEL/100). Emissions are based on single tests and would be the same under the No Action and Expanded Operations Alternatives. The pollutant concentrations are evaluated in Section 5.3.8, Human Health and Worker Safety.

## Fire Testing

Objective: Determine if concentrations of criteria pollutants and chemicals from open burning comply with the National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and (OEL)/100 standards and guidelines



Source: Original

**Figure D.1–6. Flow Chart for Evaluation of Open Burning at the Lurance Canyon Burn Site**  
*Open burning emissions are evaluated against national and state ambient air quality standards, using the OBODM computer model.*

**Table D.1–31. Toxic Pollutant Emissions from Open Burning of JP-8 Fuel at the Lurance Canyon Burn Site Under the No Action and Expanded Operations Alternatives**

| POLLUTANT                        | EMISSION FACTOR<br>(g/g) | OEL/100<br>( $\mu\text{g}/\text{m}^3$ ) | ESTIMATED 8-HOUR<br>CONCENTRATION ( $\mu\text{g}/\text{m}^3$ ) |
|----------------------------------|--------------------------|---|--|
| <i>1,1,2-trichloroethane</i>     | $5.90 \times 10^{-5}$    | 450                                     | $5.42 \times 10^{-2}$  |
| <i>1,2,3-trimethylbenzene</i>    | $1.30 \times 10^{-4}$    | 1,230                                   | $1.19 \times 10^{-1}$  |
| <i>1,2,4-trichlorobenzene</i>    | $2.00 \times 10^{-3}$    | 380                                     | 1.84   |
| <i>1,2,4-trimethylbenzene</i>    | $1.40 \times 10^{-4}$    | 1,230                                   | $1.29 \times 10^{-1}$  |
| <i>1,2-dichloroethane</i>        | $3.50 \times 10^{-6}$    | 40                                      | $3.21 \times 10^{-3}$  |
| <i>1,2-dichloropropane</i>       | $2.50 \times 10^{-7}$    | 3,470                                   | $2.29 \times 10^{-4}$  |
| <i>1,3,5-trimethylbenzene</i>    | $2.70 \times 10^{-5}$    | 1,230                                   | $2.48 \times 10^{-2}$  |
| <i>1,3-butadiene</i>             | $2.40 \times 10^{-4}$    | 44                                      | $2.20 \times 10^{-1}$  |
| <i>1,4-dioxane</i>               | $1.80 \times 10^{-5}$    | 720                                     | $1.65 \times 10^{-2}$  |
| <i>1-butanol</i>                 | $3.00 \times 10^{-5}$    | 3,000                                   | $2.75 \times 10^{-2}$  |
| <i>1-heptene</i>                 | $2.40 \times 10^{-6}$    | NA                                      | $2.20 \times 10^{-3}$  |
| <i>1-hexene</i>                  | $2.50 \times 10^{-5}$    | 1,300                                   | $2.29 \times 10^{-2}$  |
| <i>1-octene</i>                  | $1.20 \times 10^{-5}$    | NA                                      | $1.10 \times 10^{-2}$  |
| <i>1-pentene</i>                 | $2.10 \times 10^{-5}$    | NA                                      | $1.93 \times 10^{-2}$  |
| <i>2,2,3-trimethylpentane</i>    | $3.80 \times 10^{-6}$    | NA                                      | $3.49 \times 10^{-3}$  |
| <i>2,2,5-trimethylhexane</i>     | $5.40 \times 10^{-6}$    | NA                                      | $4.96 \times 10^{-3}$  |
| <i>2,4,4-trimethyl-1-pentene</i> | $8.80 \times 10^{-6}$    | NA                                      | $8.08 \times 10^{-3}$  |
| <i>2,4-dimethylpentane</i>       | $1.40 \times 10^{-6}$    | NA                                      | $1.29 \times 10^{-3}$  |
| <i>2,5-dimethylhexane</i>        | $4.20 \times 10^{-6}$    | NA                                      | $3.86 \times 10^{-3}$  |
| <i>2,5-dimethylthiophene</i>     | $1.20 \times 10^{-6}$    | NA                                      | $1.10 \times 10^{-3}$  |
| <i>2-butanone</i>                | $4.00 \times 10^{-6}$    | 5,900                                   | $3.67 \times 10^{-3}$  |
| <i>2-butyne</i>                  | $2.00 \times 10^{-6}$    | NA                                      | $1.84 \times 10^{-3}$  |
| <i>2-methyl-2-butene</i>         | $4.50 \times 10^{-6}$    | NA                                      | $4.13 \times 10^{-3}$  |
| <i>3-methylheptane</i>           | $1.50 \times 10^{-5}$    | NA                                      | $1.38 \times 10^{-2}$  |
| <i>3-methylhexane</i>            | $1.60 \times 10^{-5}$    | NA                                      | $1.47 \times 10^{-2}$  |
| <i>3-methylpentane</i>           | $2.60 \times 10^{-6}$    | 7,000                                   | $2.39 \times 10^{-3}$  |
| <i>4-nonene</i>                  | $3.30 \times 10^{-6}$    | NA                                      | $3.03 \times 10^{-3}$  |
| <i>A-pinene</i>                  | $1.00 \times 10^{-4}$    | NA                                      | $9.18 \times 10^{-2}$  |
| <i>Acetone</i>                   | $1.70 \times 10^{-5}$    | 5,900                                   | $1.56 \times 10^{-2}$  |
| <i>Acetaldehyde</i>              | $6.50 \times 10^{-6}$    | 900                                     | $5.97 \times 10^{-3}$  |
| <i>B-pinene</i>                  | $1.60 \times 10^{-5}$    | NA                                      | $1.47 \times 10^{-2}$  |

**Table D.1–31. Toxic Pollutant Emissions from Open Burning of JP-8 Fuel at the Lurance Canyon Burn Site Under the No Action and Expanded Operations Alternatives (continued)**

| POLLUTANT                | EMISSION FACTOR<br>(g/g) | OEL/100<br>( $\mu\text{g}/\text{m}^3$ ) | ESTIMATED 8-HOUR<br>CONCENTRATION ( $\mu\text{g}/\text{m}^3$ ) |
|--------------------------|--------------------------|---|--|
| Benzene                  | $2.00 \times 10^{-3}$    | 3.2                                     | $1.84 \times 10^{-2}$  |
| Benzyl chloride          | $2.70 \times 10^{-5}$    | 50                                      | $2.48 \times 10^{-2}$  |
| Bischloroethyl ether     | $5.00 \times 10^{-6}$    | 290                                     | $4.59 \times 10^{-3}$  |
| C-2-butene               | $5.10 \times 10^{-6}$    | NA                                      | $4.68 \times 10^{-3}$  |
| C-2-pentene              | $2.10 \times 10^{-6}$    | NA                                      | $1.93 \times 10^{-3}$  |
| C-3-methyl-2-pentene     | $1.80 \times 10^{-7}$    | NA                                      | $1.65 \times 10^{-4}$  |
| Chloromethane            | $1.50 \times 10^{-6}$    | 1,030                                   | $1.38 \times 10^{-3}$  |
| Cyclohexanone            | $1.90 \times 10^{-5}$    | 1,000                                   | $1.74 \times 10^{-2}$  |
| Cyclopentene             | $2.00 \times 10^{-6}$    | NA                                      | $1.84 \times 10^{-3}$  |
| Dibromochloromethane     | $4.60 \times 10^{-6}$    | NA                                      | $4.22 \times 10^{-3}$  |
| Dichlorodifluoromethane  | $9.40 \times 10^{-7}$    | 49,500                                  | $8.63 \times 10^{-4}$  |
| Ethanol                  | $3.50 \times 10^{-5}$    | 18,800                                  | $3.21 \times 10^{-2}$  |
| Ethylbenzene             | $3.50 \times 10^{-5}$    | 4,340                                   | $3.21 \times 10^{-2}$  |
| Heptanal                 | $2.30 \times 10^{-6}$    | NA                                      | $2.11 \times 10^{-3}$  |
| Hexachloro-1,3-butadiene | $2.30 \times 10^{-6}$    | 2.1                                     | $2.11 \times 10^{-3}$  |
| Hexanal                  | $5.90 \times 10^{-5}$    | NA                                      | $5.42 \times 10^{-2}$  |
| Indan                    | $3.40 \times 10^{-6}$    | NA                                      | $3.12 \times 10^{-3}$  |
| Indene                   | $3.80 \times 10^{-4}$    | 450                                     | $3.49 \times 10^{-1}$  |
| Isobutene                | $1.10 \times 10^{-4}$    | NA                                      | $1.01 \times 10^{-1}$  |
| Isobutylbenzene          | $5.00 \times 10^{-6}$    | NA                                      | $4.59 \times 10^{-3}$  |
| Isoheptane               | $1.10 \times 10^{-5}$    | NA                                      | $1.01 \times 10^{-2}$  |
| Isopentane               | $3.30 \times 10^{-6}$    | NA                                      | $3.03 \times 10^{-3}$  |
| Isopentyl mercaptan      | $2.70 \times 10^{-6}$    | NA                                      | $2.48 \times 10^{-3}$  |
| Isoprene                 | $1.70 \times 10^{-5}$    | NA                                      | $1.56 \times 10^{-2}$  |
| Isopropylbenzene         | $5.10 \times 10^{-6}$    | 2,450                                   | $4.68 \times 10^{-3}$  |
| Isovaleraldehyde         | $3.30 \times 10^{-4}$    | NA                                      | $3.03 \times 10^{-1}$  |
| Limonene                 | $6.00 \times 10^{-5}$    | NA                                      | $5.51 \times 10^{-2}$  |
| M-diethylbenzene         | $7.00 \times 10^{-5}$    | NA                                      | $6.43 \times 10^{-2}$  |
| M-thyltoluene            | $2.80 \times 10^{-5}$    | NA                                      | $2.57 \times 10^{-2}$  |
| Methanol                 | $7.70 \times 10^{-6}$    | 2,600                                   | $7.07 \times 10^{-3}$  |
| Methylcyclohexane        | $8.90 \times 10^{-5}$    | 16,000                                  | $8.17 \times 10^{-2}$  |

**Table D.1–31. Toxic Pollutant Emissions from Open Burning of JP-8 Fuel at the Lurance Canyon Burn Site Under the No Action and Expanded Operations Alternatives (concluded)**

| POLLUTANT                   | EMISSION FACTOR<br>(g/g) | OEL/100<br>( $\mu\text{g}/\text{m}^3$ ) | ESTIMATED 8-HOUR<br>CONCENTRATION ( $\mu\text{g}/\text{m}^3$ ) |
|-----------------------------|--------------------------|---|--|
| <i>Methylcyclopentane</i>   | $1.90 \times 10^{-5}$    | NA                                      | $1.74 \times 10^{-2}$  |
| <i>Methylcyclopentene</i>   | $1.80 \times 10^{-7}$    | NA                                      | $1.65 \times 10^{-4}$  |
| <i>Methylene chloride</i>   | $1.20 \times 10^{-7}$    | 1,740                                   | $1.10 \times 10^{-4}$  |
| <i>Methylisobutylketone</i> | $8.40 \times 10^{-6}$    | 820                                     | $7.71 \times 10^{-3}$  |
| <i>N-butylbenzene</i>       | $9.10 \times 10^{-5}$    | NA                                      | $8.35 \times 10^{-2}$  |
| <i>N-decane</i>             | $4.10 \times 10^{-4}$    | NA                                      | $3.76 \times 10^{-1}$  |
| <i>N-heptane</i>            | $2.90 \times 10^{-5}$    | 3,500                                   | $2.66 \times 10^{-2}$  |
| <i>N-hexane</i>             | $6.80 \times 10^{-6}$    | 1,760                                   | $6.24 \times 10^{-3}$  |
| <i>N-nonane</i>             | $6.20 \times 10^{-5}$    | 10,500                                  | $5.69 \times 10^{-2}$  |
| <i>N-octane</i>             | $4.70 \times 10^{-5}$    | 3,500                                   | $4.31 \times 10^{-2}$  |
| <i>N-propylbenzene</i>      | $4.50 \times 10^{-5}$    | NA                                      | $4.13 \times 10^{-2}$  |
| <i>N-undecane</i>           | $1.10 \times 10^{-3}$    | NA                                      | 1.01   |
| <i>Naphthalene</i>          | $1.20 \times 10^{-3}$    | 500                                     | 1.10   |
| <i>O-ethyltoluene</i>       | $4.70 \times 10^{-5}$    | NA                                      | $4.31 \times 10^{-2}$  |
| <i>O-xylene</i>             | $3.90 \times 10^{-5}$    | 4,340                                   | $3.58 \times 10^{-2}$  |
| <i>P-diethylbenzene</i>     | $1.20 \times 10^{-4}$    | NA                                      | $1.10 \times 10^{-1}$  |
| <i>P-ethyltoluene</i>       | $1.30 \times 10^{-5}$    | NA                                      | $1.19 \times 10^{-2}$  |
| <i>P-isopropyltoluene</i>   | $2.60 \times 10^{-6}$    | NA                                      | $2.39 \times 10^{-3}$  |
| <i>P-xylene</i>             | $1.90 \times 10^{-4}$    | 4,340                                   | $1.74 \times 10^{-1}$  |
| <i>Propane</i>              | $4.80 \times 10^{-7}$    | 18,000                                  | $4.41 \times 10^{-4}$  |
| <i>Styrene</i>              | $2.90 \times 10^{-4}$    | 850                                     | $2.66 \times 10^{-1}$  |
| <i>T-2-butene</i>           | $1.00 \times 10^{-4}$    | NA                                      | $9.18 \times 10^{-2}$  |
| <i>T-2-pentene</i>          | $3.30 \times 10^{-6}$    | NA                                      | $3.03 \times 10^{-3}$  |
| <i>Tetrahydrothiophene</i>  | $7.70 \times 10^{-8}$    | NA                                      | $7.07 \times 10^{-5}$  |
| <i>Toluene</i>              | $3.30 \times 10^{-4}$    | 1,880                                   | $3.03 \times 10^{-1}$  |
| <i>Trichloroethylene</i>    | $3.10 \times 10^{-6}$    | 2,690                                   | $2.85 \times 10^{-3}$  |
| <i>Vinyl chloride</i>       | $2.20 \times 10^{-5}$    | 130                                     | $2.02 \times 10^{-2}$  |

Sources: ACGIH 1997, Bjorklund et al. 1997

g/g: grams of pollutant per gram of JP-8 fuel

lb/gal: pounds per gallon

$\mu\text{g}/\text{m}^3$ : micrograms per cubic meter

NA: Not available

OEL: occupational exposure limit

Notes: 1) The nearest distance from burn site to boundary: 3,050 meters

2) JP-8 density: 6.67 lb/gal

3) OBODM-predicted 1-hour decontamination factor (DF):  $7.3439 \times 10^3 \mu\text{g}/\text{m}^3 / 1,000 \text{ gal JP-8}$

4) See text in D.1.5

This page was intentionally left blank

## D.2 RADIOLOGICAL AIR QUALITY

This section presents detailed information on the methodology and data used to calculate the potential radiological doses associated with radiological air emissions during normal operations under the No Action, Expanded Operations, and Reduced Operations Alternatives. If implemented, the Microsystems and Engineering Sciences Applications Complex configuration would not change the potential radiological doses associated with radiological air emissions under the Expanded Operations Alternative.

The radiological dose to the maximally exposed individual (MEI) and collective dose to the population within 50 mi of SNL/NM, due to the radiological air emissions from routine SNL/NM facility operations, were evaluated. This evaluation is required to show compliance with the National Emissions Standard for Hazardous Air Pollutants (NESHAP), which limits public dose received from radiological material released to the atmosphere to 10 mrem/yr, in addition to natural background and medical radiation doses normally received.

All SNL/NM facilities that have the potential for radiological emissions were reviewed. Based on historic SNL/NM radionuclide emissions data and NESHAP compliance reports, 10 facilities in 5 TAs were considered for modeling potential radiological impacts (Figure D.2–1). Based on the review of historical reported doses from NESHAP, other facilities that would not contribute more than 0.01 mrem/yr (0.1 percent of the NESHAP limit) to the MEI were screened from further consideration. These 10 facilities are also part of the 33 facilities identified in Chapter 2 as “selected” facilities for examination in the SWEIS. They include the following:

- Annular Core Research Reactor (ACRR)—Defense Programs (DP) configuration
- ACRR—medical isotopes production configuration
- Sandia Pulsed Reactor (SPR)
- Hot Cell Facility (HCF)
- Radioactive and Mixed Waste Management Facility (RMWMF)
- Mixed Waste Landfill (MWL)
- High-Energy Radiation Megavolt Electron Source III (HERMES III)
- Radiographic Integrated Test Stand (RITS)

- Explosive Components Facility (ECF)
- Neutron Generator Facility (NGF)

The ACRR could be operated under either DP configuration or medical isotopes production configuration. For purposes of this evaluation and to ensure conservative results, the facility was assumed to be operating under both configurations simultaneously.

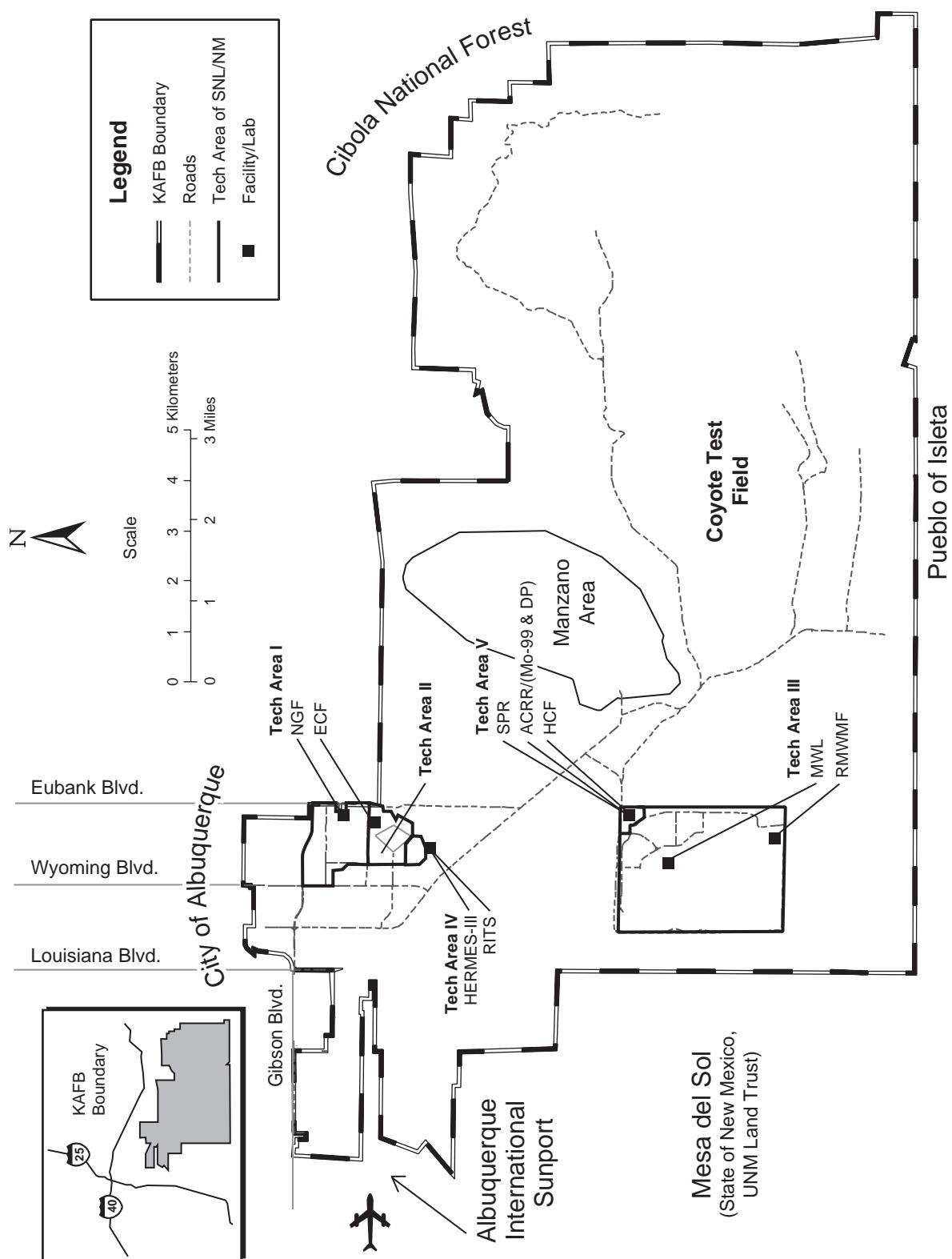
TA-V was selected as the center of the 50-mi ROI for all facilities (where modeled releases to the environment would result in a calculated dose to the population). It was selected because the majority of radiological emissions would be from the HCF in TA-V and TA-V has historically been addressed in annual NESHAP compliance reports.

The radiological impacts of normal operations of each alternative, based on estimated radionuclide emissions, were calculated by using the *Clean Air Assessment Package (CAP88-PC)* computer model, which is being used for demonstrating NESHAP compliance (DOE 1997e).

*CAP88-PC* is an improved version of its predecessor computer code, *AIRDOS-EPA*. In *CAP88-PC*, a modified Gaussian plume equation is used to estimate both horizontal and vertical air dispersion of as many as 20 radionuclides released from 1 to 6 stacks. The model calculates exposure to radionuclide releases that can occur through external (air immersion and surface ground-shine) and internal (inhalation and ingestion) pathways.

The external dose is from exposure to a cloud of radiation passing over the receptor who is standing on ground that is contaminated with radioactive material. The appropriate dose quantity is called the effective dose equivalent (EDE). The internal dose arises from a radiation source entering the human body through ingestion of contaminated food and water and inhalation of contaminated air. The pathways for internal exposure include ingestion of crops contaminated by airborne radiation that has been deposited on the crops and ingestion of food products from animals that have ingested contaminated food. This is the internal dose that each body receives from a “1-year intake.” The integral of the dose rate over the years (that is, 50 years) gives the committed EDE. The sum of the two dose quantities from external and internal pathways is presented in the SWEIS as the total EDE (TEDE), pursuant to U.S. Department of Energy (DOE) 5400.1.

Rates of ingestion of radionuclides are based on the terrestrial transport model of the *U.S. Nuclear Regulatory Commission's Regulatory Guide 1.109* food chain model (NRC 1977a). Dose conversion factors are derived from data generated by the *DARTAB* model, an integral part of



Source: Original

**Figure D.2–1. SNL/NM Facilities that Release Radionuclides**  
*The 10 analyzed SNL/NM facilities that release radionuclides are in 5 technical areas.*

*CAP88-PC*, which follows the methodology of the International Commission for Radiation Protection (ICRP). These are the components built into the execution of the *CAP88-PC* model.

In performing the dose calculations using the *CAP88-PC* model, the following types of data are used:

- *Emissions Data*—The estimated radiological emissions from each of the 10 SNL/NM facilities under each alternative are extracted from SNL/NM facility source documents (SNL/NM 1998a) and used in the dose evaluations. Table D.2–1 presents the radiological emissions data from these 10 sources for the No Action, Expanded Operations, and Reduced Operations Alternatives. The radiological emissions from each facility are estimated based on SNL/NM planned operations and tests projected into the future under each alternative. The details are available in the SNL/NM facility source documents (SNL/NM 1998a). The ACRR and HCF emissions for the base year 1996 are different due to refurbishing operations to change over to medical isotopes production configuration. The SPR emissions are estimated to be higher than the base year. This is due to instituting NESHAP requirements for “confirmatory measurements” of radiological air emissions, where measured emission factors were determined for both the SPR and the ACRR. These measured emission factors were found to be higher than the calculated emissions factors. These measurements are source-specific to the SPR and ACRR and would not affect the calculations and measurements for other facilities.
- *Source Parameters Data*—Facility releases, which are point sources, occur from stack exhausts or vents. For these releases, the *CAP88-PC* model calculates a momentum-type plume rise. Plume rise is calculated from the stack diameter and exhaust velocity. The MWL is an area facility and is assumed to be a ground-level release with no exhaust parameters. Therefore, *CAP88-PC* uses a ground release height. Table D.2–2 presents the source parameters.
- *Meteorological Data*—Three years (1994–1996) of meteorological data, including wind speed, wind direction, and stability, are used by SNL/NM to create a stability array (STAR) data file for each of four monitoring towers (CW1, A21, A36, and MW1) (Figure D.2–2). These SNL/NM-supplied meteorological data were used by the *CAP88-PC* model to calculate the doses. The meteorological data from the nearest representative meteorological tower to the source being evaluated were used to calculate the dose to the MEI and the population within

50 mi. Meteorological data from tower A36 were used to model the ACRR, HCF, and SPR. Meteorological data from tower A21 were used to model the HERMES III, RITS, ECF, and NGF. Meteorological data from tower MW1 were used to model the MWL. The RMWMF was modeled using meteorological data from tower CW1.

In addition, annual average temperature and precipitation data recorded by SNL/NM at these towers were used to calculate composite three-year average temperature and precipitation and further used as input to the *CAP88-PC*. Precipitation is measured only at towers A36 and A21. The composite average precipitation value calculated from A36 is assumed to be representative of towers MW1 and CW1.

The composite average temperatures for towers A36, A21, MW1, and CW1 are 14.6, 14.3, 14.3, and 14.2 °C, respectively. The composite average precipitation levels at towers A36 and A21 are 26.3 and 24.4 cm/yr, respectively. The mixing height, based on Sunport meteorological data that is used in the NESHAP report (SNL/NM 1996u), 2,055 m above ground level, is used as input to the *CAP88-PC*.

- *Demographic Data*—Demographic data include population, numbers of beef and dairy cattle, and the area of food crop harvesting. Although the *CAP88-PC* model contains default demographic data for the Albuquerque area, based on site-wide demographic averages, SNL/NM generated a more accurate data set based on available data on a per-county basis (SNL/NM 1996u). These data, within 5 equal segments for each wind direction (total 80 equal segments spaced to cover a 50-mi radius, including 16 wind direction subdivisions) were used by SNL/NM.

SNL/NM estimated population based on 1994–1995 population data and estimated agricultural data obtained from the U.S. Department of Commerce (SNL/NM 1996u). These data were also used in the *CAP88-PC* model. SNL/NM does not have any onsite agricultural production; only agricultural data beyond the site boundary to a 50-mi radius were considered in the impact evaluation.

Table D.2–3 presents population distribution. The densities of beef and dairy cattle within the 50-mi radius of SNL/NM were 2.016 beef cattle per square kilometer and 0.554 dairy cattle per square kilometer (SNL/NM 1996u).

- *Receptor Locations*—Fourteen core receptor locations were considered in evaluating the impacts due to routine operations at SNL/NM. These receptor

**Table D.2–1. Radiological Emissions from Sources at SNL/NM**

| FACILITY NAME   | TECHNICAL AREA | RADIONUCLIDE <sup>a</sup> | NO ACTION              | EXPANDED                      | REDUCED                       |
|---|----------------|---------------------------|------------------------|-------------------------------|-------------------------------|
|   |                |                           | RELEASE<br>(Ci/yr)     | OPERATIONS RELEASE<br>(Ci/yr) | OPERATIONS RELEASE<br>(Ci/yr) |
| <i>Annular Core Research Reactor, Building 6588 (ACRR, DP configuration)</i>                          | V              | Argon-41                  | 2.6                    | 7.8                           | 0                             |
| <i>Annular Core Research Reactor, Building 6588 (ACRR, medical isotopes production configuration)</i> | V              | Argon-41                  | 1.1                    | 2.2                           | 0.24                          |
|   |                | Tritium                   | 1.1                    | 2.2                           | 0.24                          |
| <i>Explosive Components Facility, Building 905 (ECF)</i>  | II             | Tritium                   | 2.0x10 <sup>-3</sup>   | 2.0x10 <sup>-3</sup>          | 2.0x10 <sup>-3</sup>          |
| <i>High-Energy Radiation Megavolt Electron Source III, Building 970 (HERMES III)</i>                  | IV             | Nitrogen-13               | 1.245x10 <sup>-3</sup> | 3.603x10 <sup>-3</sup>        | 1.0x10 <sup>-4</sup>          |
|   |                | Oxygen-15                 | 1.245x10 <sup>-4</sup> | 3.603x10 <sup>-4</sup>        | 1.0x10 <sup>-5</sup>          |
| <i>Hot Cell Facility, Building 6580 (HCF)</i>   | V              | Iodine-131                | 1.17                   | 3.90                          | 0.117                         |
|   |                | Iodine-132                | 3.0                    | 10.0                          | 0.3                           |
|   |                | Iodine-133                | 5.4                    | 18.0                          | 0.54                          |
|   |                | Iodine-134                | 0.22                   | 0.72                          | 0.022                         |
|   |                | Iodine-135                | 3.3                    | 11.0                          | 0.33                          |
|   |                | Krypton-83m               | 198.0                  | 660.0                         | 19.8                          |
|   |                | Krypton-85                | 0.19                   | 0.63                          | 0.019                         |
|   |                | Krypton-85m               | 290.0                  | 970.0                         | 29.0                          |
|   |                | Krypton-87                | 57.0                   | 190.0                         | 5.7                           |
|   |                | Krypton-88                | 480.0                  | 1,600.0                       | 48.0                          |
|   |                | Xenon-131m                | 1.8                    | 5.9                           | 0.18                          |
|   |                | Xenon-133                 | 2,160.0                | 7,200.0                       | 216.0                         |
|   |                | Xenon-133m                | 102.0                  | 340.0                         | 10.2                          |
|   |                | Xenon-135                 | 2,070.0                | 6,900.0                       | 207.0                         |
|   |                | Xenon-135m                | 360.0                  | 1,200.0                       | 36.0                          |
| <i>Mixed Waste Landfill (MWL)</i>   | III            | Tritium                   | 0.29                   | 0.29                          | 0.29                          |
| <i>Neutron Generator Facility, Building 870 (NGF)</i>   | I              | Tritium                   | 156                    | 156                           | 156                           |
| <i>Radioactive and Mixed Waste Management Facility, Building 6920 (RMWMF)</i>                         | III            | Tritium                   | 2.203 <sup>b</sup>     | 2.203 <sup>b</sup>            | 2.203 <sup>b</sup>            |
| <i>Radiographic Integrated Test Stand, Building 970 (RITS)</i>  | IV             | Nitrogen-13               | 0.12                   | 0.16                          | 0.02                          |
| <i>Sandia Pulsed Reactor (SPR), Building 6590</i>   | V              | Argon-41                  | 9.5                    | 30.0                          | 2.85                          |

Source: SNL/NM 1998a

Ci/yr: Curies per year

DP: Defense Programs

SNL/NM: Sandia National Laboratories/New Mexico

<sup>a</sup> Radionuclide emissions presented in this table represent projections based on activity forecasts and do not match historical emissions due to changing activities and programs.<sup>b</sup> Because SNL/California tritium-contaminated oils handled at the RMWMF during the base year were abnormally high, this maximum level of emissions is assumed to be released in any year and, therefore, is constant for all alternatives.

**Table D.2–2. Release Parameters for SNL/NM Facilities**

| FACILITY  | RELEASE HEIGHT (m) | STACK DIAMETER (m) | RELEASE TEMPERATURE (°C) | EXHAUST VELOCITY (m/sec) | PLUME RISE |
|---|--------------------|--------------------|--------------------------|--------------------------|------------|
| <i>Annular Core Research Reactor (ACRR DP configuration)</i>                          | 16.5               | 0.20               | 21                       | 11.1                     | Momentum   |
| <i>Annular Core Research Reactor (ACRR medical isotopes production configuration)</i> | 16.5               | 0.20               | 21                       | 11.1                     | Momentum   |
| <i>Explosive Components Facility (ECF)</i>  | 3.0                | 0.5                | 21                       | 15.4                     | Momentum   |
| <i>High-Energy Radiation Megavolt Electron Source III (HERMES III)</i>                | 13.5               | 0.46               | 13                       | 7.64                     | Momentum   |
| <i>Hot Cell Facility (HCF)</i>  | 38.1               | 1.8                | 21                       | 8.7                      | Momentum   |
| <i>Mixed Waste Landfill (MWL)</i>   | 0.0                | 0.00               | 21                       | 0.00                     | Zero       |
| <i>Neutron Generator Facility (NGF)</i>   | 10.6               | 0.305              | 21                       | 10.8                     | Momentum   |
| <i>Radioactive and Mixed Waste Management Facility (RMWMF)</i>                        | 16.8               | 0.61               | 19.3                     | 11.2                     | Momentum   |
| <i>Radiographic Integrated Test Stand (RITS)</i>                                      | 13.5               | 0.46               | 13                       | 7.64                     | Momentum   |
| <i>Sandia Pulsed Reactor (SPR)</i>  | 8.2                | 0.54               | 21                       | 38.6                     | Momentum   |

Source: SNL/NM 1996a

°C: degrees Celsius

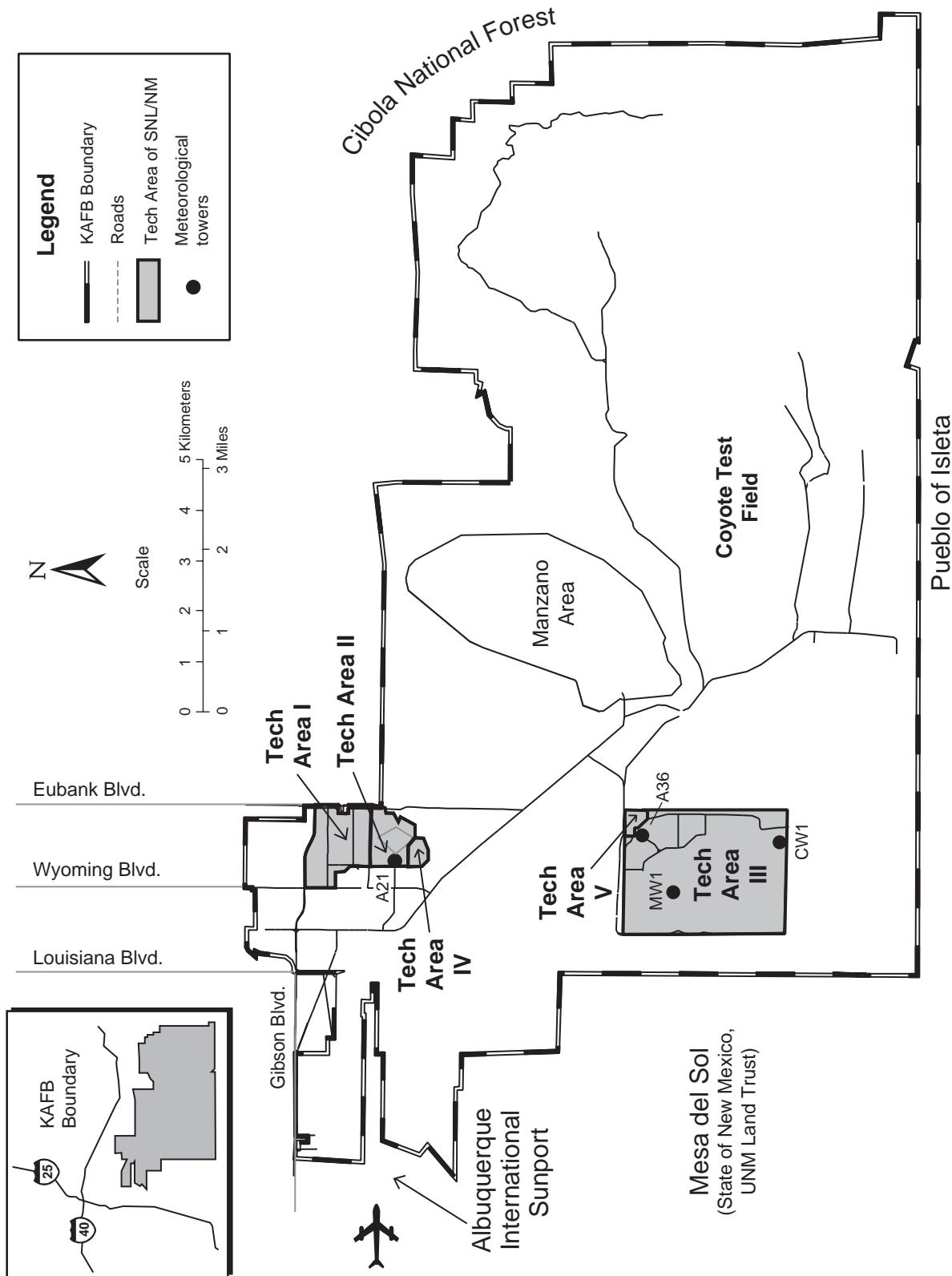
Ci/yr: Curies per year

DP: Defense Programs

m: meter

m/sec: meters per second

SNL/NM: Sandia National Laboratories/New Mexico



Source: SNL/NM 1996u

**Figure D.2–2. Locations of Meteorological Towers Closest to Selected Facilities**  
*Data from the meteorological monitoring towers closest to the selected facility were input for modeling.*

**Table D.2–3. SNL/NM Population Distribution Within 50 Miles (80 km)**

| DIRECTION<br>DISTANCE | POPULATION         |                    |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                       | 10 mile<br>(16 km) | 20 mile<br>(32 km) | 30 mile<br>(48 km) | 40 mile<br>(64 km) | 50 mile<br>(80 km) |
| <b>N</b>              | 40,341             | 33,537             | 1,929              | 2,700              | 3,472              |
| <b>NNW</b>            | 39,593             | 98,185             | 1,929              | 3,195              | 3,472              |
| <b>NW</b>             | 36,716             | 97,694             | 4,623              | 2,700              | 3,472              |
| <b>WNW</b>            | 21,134             | 32,848             | 11,807             | 8,788              | 1,434              |
| <b>W</b>              | 17,510             | 9,127              | 11,508             | 3,168              | 640                |
| <b>WSW</b>            | 26,087             | 6,445              | 6,933              | 6,130              | 1,535              |
| <b>SW</b>             | 10,846             | 3,105              | 4,622              | 5,493              | 1,855              |
| <b>SSW</b>            | 1,889              | 10,092             | 16,438             | 2,631              | 196                |
| <b>S</b>              | 1,472              | 2,773              | 4,373              | 3,882              | 233                |
| <b>SSE</b>            | 1,585              | 951                | 1,345              | 534                | 592                |
| <b>SE</b>             | 2,110              | 267                | 329                | 461                | 592                |
| <b>ESE</b>            | 2,354              | 6,274              | 3,001              | 461                | 592                |
| <b>E</b>              | 2,354              | 4,936              | 2,823              | 1,346              | 1,550              |
| <b>ENE</b>            | 2,354              | 6,084              | 2,765              | 3,853              | 4,741              |
| <b>NE</b>             | 4,327              | 7,254              | 3,271              | 3,853              | 4,954              |
| <b>NNE</b>            | 28,405             | 8,794              | 1,929              | 2,969              | 4,261              |

Source: SNL/NM 1996u

km: kilometers

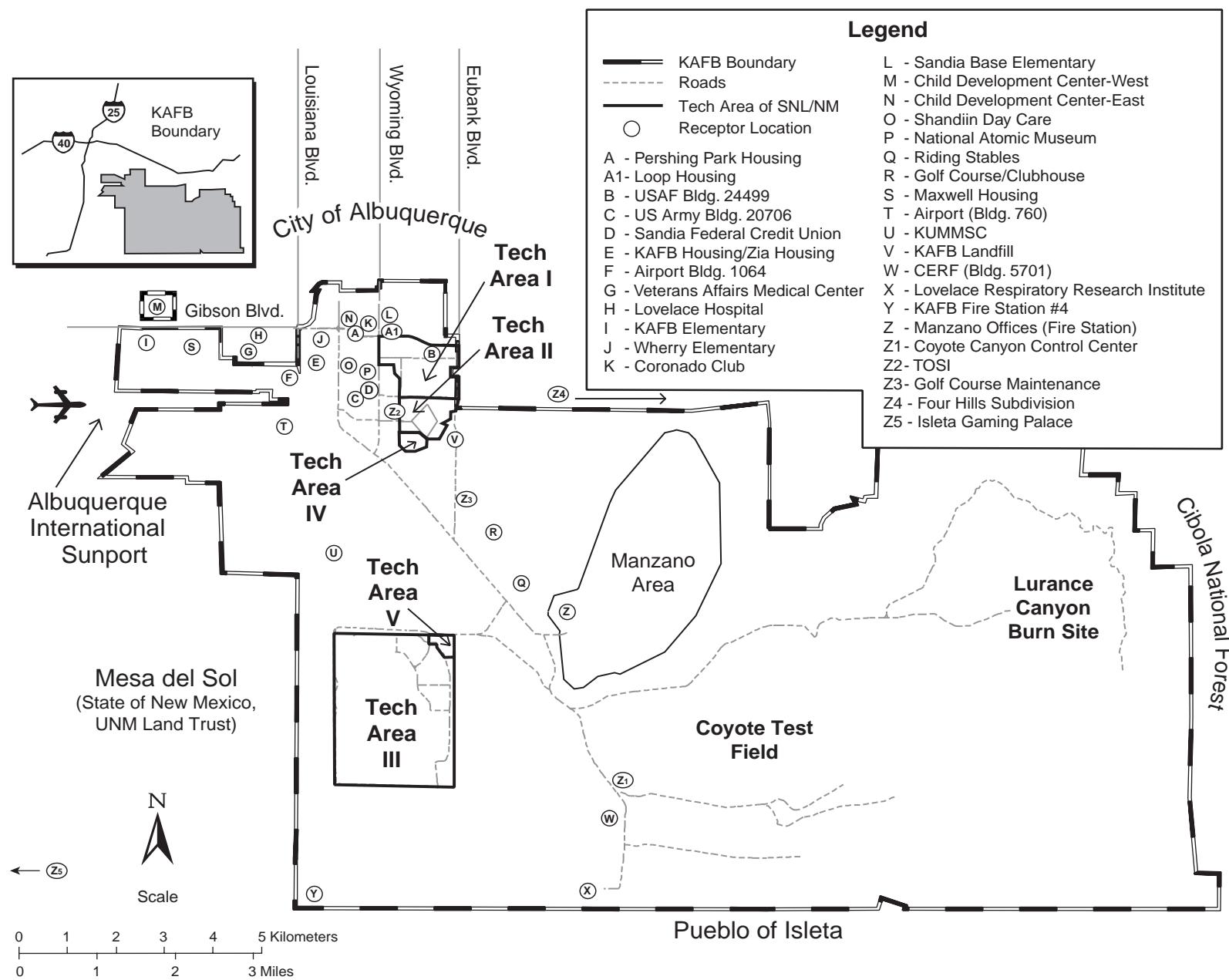
locations were selected based on the review of the NESHAP compliance reports for the public MEI, SNL/NM site information documents, and receptor locations that are in close proximity to the sources, site boundary, or are in prevailing wind directions and that represent children, sick, and elderly (schools, day care centers and hospitals). These 14 core receptors are the Child Development Center-East, Child Development Center-West, Coronado Club, Golf Course (Clubhouse), Kirtland Elementary School, KAFB Housing (Zia Park Housing), Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC), Lovelace Hospital, National Atomic Museum, Riding Stables, Sandia Base Elementary School, Shandiin Day Care Center, Veterans Affairs Medical Center (Hospital), and Wherry Elementary School. In addition, two receptors of public concern representing Four Hills Subdivision and Isleta Gaming Palace, which are farther away from SNL/NM, were also evaluated.

Because the general public and Air Force personnel have access to SNL/NM, 14 core receptor locations and 2 offsite receptor locations of public concern were considered for dose impact evaluation. Based on NESHAP reports, 16 onsite as well as 6 offsite additional receptor locations, which have been historically considered for annual NESHAP reports, were also evaluated (SNL/NM 1996u). Thirty-eight receptor locations were considered for dose impact evaluation. The concept of an onsite potential MEI receptor was conservatively assumed to include members of the military, their dependents, contractors, and other non SNL/NM personnel who have access to locations around KAFB. Offsite receptors include members of the public who are not physically located on Federal properties, which include SNL/NM, DOE, and KAFB lands. Public areas surrounding SNL/NM and adjoining military and DOE lands were surveyed for actual public residents and workers. Public lands include city, county, Bureau of Land Management (BLM), Native

American, national forest, and other private and nonrestricted Federal lands. Thirty-two of a total of 38 receptor locations, representing core receptors, 22 offsite receptors of public concern, and 16 onsite NESHAP considered receptors, are shown on Figure D.2–3. Tables D.2–4, D.2–5, and D.2–6 present the 38 NESHAP, core, and offsite receptors, along with distances and directions from each of the 10 selected SNL/NM facilities/sources that are modeled.

The model-calculated dose contributions, including external, inhalation, and ingestion exposure pathways from each of the 10 facilities/sources calculated individually at each receptor location, were combined to determine the overall SNL/NM site-wide normal operations dose to the MEI, for each alternative. The maximum TEDE was calculated from all exposure pathways from all sources to the MEI under each alternative. The EDE contributions from each of the sources to each of the receptor locations under the No Action Alternative, Expanded Operations Alternative, and Reduced Operations Alternative are presented in Tables D.2–7, D.2–8, and D.2–9, respectively.

Dose assessment results are summarized in Table D.2–10. The total doses (TEDE) from all exposure pathways and all modeled sources to the MEI are 0.15 mrem/yr under the No Action Alternative, 0.51 mrem/yr under the Expanded Operations Alternative, and 0.02 mrem/yr under the Reduced Operations Alternative. The calculated MEI dose for each alternative is much lower than the regulatory limit of 10 mrem/yr from the air pathways, and small compared to the background radiation dose of 360 mrem/yr. The calculated collective doses to population within 50 mi are 5.0 person-rem/yr under the No Action Alternative, 15.8 person-rem/yr under the Expanded Operations Alternative; and 0.80 person-rem/yr under the Reduced Operations Alternative. The calculated annual collective dose from SNL/NM operations under each alternative (5.0, 15.8, and 0.80 person-rem/yr, respectively) to the population within 50 mi would be much lower than the annual 263,700-person-rem collective dose to the population from background radiation (Figure 4.10–2).



Source: SNL/NM 1996u

**Figure D.2-3. Locations of Onsite and Near-Site Receptors**

Thirty-two onsite or near-site receptors are among a total of 38 that were evaluated for potential impacts.

**Table D.2–4. Distance (Meters) and Direction to NESHAP-Considered Receptor Locations from SNL/NM**

| FACILITY  | NGF<br>(BLDG. 870) | ECF<br>(BLDG. 905) | MWL       | RMWMF<br>(BLDG. 6920) | RITS AND<br>HERMES III<br>(BLDG. 970) | HCF<br>(BLDG. 6580) | ACRR<br>(BLDG. 6588) | SPR<br>(BLDG. 6590) |
|---|--------------------|--------------------|-----------|-----------------------|---------------------------------------|---------------------|----------------------|---------------------|
| <b>Building 20706</b>                                   | 990 SSW            | 1,212 W            | 5,928 N   | 8,281 N               | 1,466 NNW                             | 5,350 NNW           | 5,386 NNW            | 5,487 NNW           |
| <b>Building 24499</b>                                   | 900 NNE            | 1,156 N            | 7,061 N   | 9,289 N               | 2,316 NNE                             | 6,239 N             | 6,280 N              | 6,386 N             |
| <b>Civil Engineering Research Facility (Bldg. 5701)</b> | 10,203 SSE         | 9,767 SSE          | 5,465 SE  | 3,857 ESE             | 8,885 SSE                             | 5,248 SE            | 5,228 SE             | 5,152 SE            |
| <b>Coyote Canyon Control Center</b>                     | 9,873 SSE          | 9,422 SSE          | 5,663 ESE | 4,391 E               | 8,615 SE                              | 5,244 SE            | 5,231 SE             | 5,169 SE            |
| <b>Golf Course Maintenance Area</b>                     | 2,911 SSE          | 2,470 SSE          | 3,675 NNE | 5,766 N               | 1,550 SE                              | 2,708 N             | 2,751 N              | 2,856 N             |
| <b>Lovelace Respiratory Research Institute</b>          | 11,523 SSE         | 11,092 SSE         | 6,313 SE  | 4,282 SE              | 10,156 SSE                            | 6,335 SSE           | 6,309 SSE            | 6,220 SSE           |
| <b>KAFB Firestation #4 (Bldg. 9002)</b>                 | 11,403 SSW         | 11,159 SSW         | 5,332 SSW | 3,742 SW              | 9,859 SSW                             | 6,418 SSW           | 6,374 SSW            | 6,278 SSW           |
| <b>KAFB Landfill</b>                                    | 1,650 SSE          | 1,163 SSE          | 4,918 NNE | 7,084 N               | 747 E                                 | 4,027 N             | 4,068 N              | 4,174 N             |
| <b>Loop Housing</b>                                     | 1,080 NW           | 1,568 NW           | 7,097 N   | 9,428 N               | 2,438 NNW                             | 6,450 N             | 6,487 N              | 6,591 N             |
| <b>Manzano Offices (Fire Station)</b>                   | 5,851 SSE          | 5,364 SSE          | 3,704 ENE | 4,510 NE              | 4,646 SE                              | 2,563 ENE           | 2,587 ENE            | 2,613 ENE           |
| <b>Maxwell Housing</b>                                  | 4,921 W            | 5,298 WNW          | 8,240 NW  | 10,562 NNW            | 5,338 WNW                             | 8,219 NW            | 8,240 NW             | 8,318 NW            |
| <b>Pershing Park Housing</b>                            | 1,770 NW           | 2,270 NW           | 7,773 N   | 10,118 N              | 3,153 NNW                             | 7,155 NNW           | 7,192 NNW            | 7,295 N             |
| <b>Sandia Federal Credit Union</b>                      | 870 W              | 1,147 SW           | 6,439 N   | 8,785 N               | 1,873 NNW                             | 5,834 NNW           | 5,870 NNW            | 5,972 NNW           |
| <b>Sunport (Bldg. 760)</b>                              | 2,941 SW           | 3,100 W            | 5,778 NNW | 8,159 NNW             | 2,783 WNW                             | 5,601 NW            | 5,625 NW             | 5,710 NNW           |

**Table D.2–4. Distance (Meters) and Direction to NESHAP-Considered Receptor Locations from SNL/NM (concluded)**

| FACILITY  | NGF<br>(BLDG. 870) | ECF<br>(BLDG. 905) | MWL       | RMWMF<br>(BLDG. 6920) | RITS AND<br>HERMES III<br>(BLDG. 970) | HCF<br>(BLDG. 6580) | ACRR<br>(BLDG. 6588) | SPR<br>(BLDG. 6590) |
|---|--------------------|--------------------|-----------|-----------------------|---------------------------------------|---------------------|----------------------|---------------------|
| <i>Sunport<br/>(Bldg. 1064)</i>                 | 2,851 W            | 3,180 W            | 6,740 NNW | 9,128 NNW             | 3,226 WNW                             | 6,488 NNW           | 6,515 NNW            | 6,605 NNW           |
| <i>Technical Onsite<br/>Inspection Facility</i> | 1,290 SSW          | 4,385 SSE          | 5,099 N   | 7,431 N               | 642 NW                                | 4,475 NNW           | 4,511 NNW            | 4,613 NNW           |

Source: SNL/NM 1996u

ACRR: Annular Core Research Reactor

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES III: High-Energy Radiation Megavolt Electron Source III

KAFB: Kirtland Air Force Base

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

**Table D.2–5. Distance (Meters) and Direction to Core Receptor Locations from SNL/NM**

| FACILITY   | NGF<br>(BLDG.<br>870) | ECF<br>(BLDG.<br>905) | MWL       | RMWMF<br>(BLDG.<br>6920) | RITS AND<br>HERMES-III<br>(BLDG.<br>970) | HCF<br>(BLDG.<br>6580) | ACRR<br>(BLDG.<br>6588) | SPR<br>(BLDG.<br>6590) |
|--|-----------------------|-----------------------|-----------|--------------------------|--|------------------------|-------------------------|------------------------|
| <i>Child Development Center-East</i>   | 1,729 NW              | 2,455 NW              | 6,683 NNW | 9,749 N                  | 2,927 NNW                                | 6,898 NNW              | 6,898 NNW               | 6,898 NNW              |
| <i>Child Development Center-West</i>   | 5,487 WNW             | 6,094 WNW             | 8,653 NW  | 11,266 NNW               | 6,031 WNW                                | 8,984 NW               | 8,984 NW                | 8,984 NW               |
| <i>Coronado Club</i>   | 1,528 NW              | 2,268 NW              | 6,630 NNE | 9,732 N                  | 2,803 NNW                                | 6,862 NNW              | 6,862 NNW               | 6,862 NNW              |
| <i>Golf Course Clubhouse<sup>a</sup></i>   | 3,751 SSE             | 3,289 SSE             | 3,092 NNE | 5,037 N                  | 2,360 SSE                                | 2,004 NNE              | 2,048 NNE               | 2,150 NNE              |
| <i>Kirtland Elementary School</i>  | 5,920 W               | 6,489 WNW             | 8,784 NW  | 11,309 NNW               | 6,341 WNW                                | 9,107 NW               | 9,107 NW                | 9,107 NW               |
| <i>Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC)<sup>a</sup></i> | 4,321 S               | 3,973 SSW             | 2,036 N   | 4,414 NNW                | 2,811 SSW                                | 1,770 NW               | 1,798 NW                | 1,866 NW               |
| <i>Lovelace Hospital</i>   | 3,764 WNW             | 4,386 WNW             | 7,364 NNW | 10,185 NNW               | 4,454 NNW                                | 7,644 NNW              | 7,644 NNW               | 7,644 NNW              |
| <i>National Atomic Museum</i>  | 1,120 WNW             | 1,767 WNW             | 5,835 NNW | 8,937 N                  | 2,079 NNW                                | 6,065 NNW              | 6,065 NNW               | 6,065 NNW              |
| <i>Riding Stables<sup>a</sup></i>  | 4,861 SSE             | 1,276 WNW             | 2,985 NE  | 4,421 NNE                | 3,543 SE                                 | 1,754 NE               | 1,791 NE                | 1,859 NE               |
| <i>Sandia Base Elementary</i>  | 1,572 NNW             | 2,307 NW<br>2,297 NNW | 6,817 NNE | 9,921 NNW                | 2,961 NNW                                | 7,176 N                | 7,176 N                 | 7,176 N                |
| <i>Shandiin Day Care Center</i>  | 1,670 W<br>1,673 WNW  | 2,279 WNW             | 5,981 NNW | 9,026 N                  | 2,432 NW                                 | 6,240 NNW              | 6,240 NNW               | 6,240 NNW              |
| <i>Veterans Affairs Medical Center</i>   | 3,623 W<br>3,650 WNW  | 4,212 WNW             | 6,936 NNW | 9,783 NNW                | 3,964 NW                                 | 7,372 NW<br>7,201 NNW  | 7,372 NW<br>7,201 NNW   | 7,372 NW<br>7,201 NNW  |
| <i>Wherry Elementary School</i>  | 2,124 WNW             | 2,861 WNW<br>2,860 NW | 6,881 NNW | 9,739 NNW                | 3,091 NW                                 | 6,997 NNW              | 6,997 NNW               | 6,997 NNW              |
| <i>Zia Park Housing<sup>a</sup></i>  | 1,860 W               | 2,171 W               | 6,351 NNW | 8,739 NWW                | 2,331 NW                                 | 5,934 NNW              | 5,965 NNW               | 6,061 NNW              |

Source: SNL/NM 1996a

ACRR: Annular Core Research Reactor

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES III: High-Energy Radiation Megavolt Electron Source III

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

<sup>a</sup> Also a NESHAP-considered receptor location

**Table D.2–6. Distance (Meters) and Direction to Offsite Receptor Locations From SNL/NM**

| FACILITY                                | NGF<br>(BLDG.<br>870) | ECF<br>(BLDG.<br>905) | MWL        | RMWMF<br>(BLDG.<br>6920) | RITS AND<br>HERMES III<br>(BLDG. 970) | HCF<br>(BLDG.<br>6580) | ACRR<br>(BLDG.<br>6588) | SPR<br>(BLDG.<br>6590) |
|---|-----------------------|-----------------------|------------|--------------------------|---------------------------------------|------------------------|-------------------------|------------------------|
| <i>Albuquerque City Offices</i>         | 6,212 SW              | 6,269 WSW             | 5,528 WNW  | 7,472 NW                 | 5,510 WSW                             | 6,084 WNW              | 6,083 WNW               | 6,118 WNW              |
| <i>East Resident</i>                    | 18,695 ESE            | 18,352 NNE            | 17,917 E   | 17,291 E                 | 18,294 ESE                            | 16,991 E               | 16,836 E                | 16,998 E               |
| <i>Eubank Gate Area (Building 8895)</i> | 720 NE                | 862 ESE               | 6,746 N    | 8,960 N                  | 2,022 NNE                             | 5,908 N                | 5,949 N                 | 6,055 N                |
| <i>Four Hills Subdivision</i>           | 2,851 ESE             | 2,520 E               | 6,554 NNE  | 8,379 NNE                | 2,989 ENE                             | 5,435 NNE              | 5,479 NNE               | 5,576 NNE              |
| <i>Isleta Gaming Palace</i>             | 16,354 SW             | 16,309 SW             | 12,150 WSW | 11,907 WSW               | 15,298 SW                             | 13,366 WSW             | 13,332 WSW              | 13,278 WSW             |
| <i>Northeast Resident</i>               | 7,562 ESE             | 7,199 ESE             | 8,340 ENE  | 8,999 NE                 | 7,235 E                               | 7,145 ENE              | 7,175 ENE               | 7,220 ENE              |
| <i>Seismic Center (USGS)</i>            | 13,533 SE             | 13,099 SE             | 9,472 ESE  | 7,829 ESE                | 12,381 SE                             | 9,123 SE               | 9,110 SE                | 9,045 SE               |
| <i>Tijeras Arroyo (West)</i>            | 5,851 W               | 5,799 SW              | 4,224 WNW  | 6,184 NW                 | 4,871 WSW                             | 4,829 WNW              | 4,825 WNW               | 4,854 WNW              |

Source: SNL/NM 1996u

ACRR: Annular Core Research Reactor

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES III: High-Energy Radiation Megavolt Electron Source III

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

USGS: U.S. Geological Survey

**Table D.2–7. Summary of Dose Estimates to Each of the SNL/NM Receptors from No Action Alternative Emissions**

| RECEPTORS  | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                   | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|--|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|-----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <b>ONSITE and/or SPECIAL POTENTIAL MEI (mrem/yr)</b>                           |                        |                                    |                                 |                        |                                 |                       |                          |                       |                       |                        |                      |
| <b>Building 20706</b>  | $1.5 \times 10^{-4}$   | $2.3 \times 10^{-5}$               | $4.4 \times 10^{-5}$            | $2.2 \times 10^{-2}$   | $7.3 \times 10^{-8}$            | $7.8 \times 10^{-8}$  | $2.3 \times 10^{-6}$     | $1.0 \times 10^{-7}$  | $5.6 \times 10^{-3}$  | $7.0 \times 10^{-6}$   | $2.8 \times 10^{-2}$ |
| <b>Building 24499</b>  | $9.6 \times 10^{-5}$   | $1.5 \times 10^{-5}$               | $2.9 \times 10^{-5}$            | $1.4 \times 10^{-2}$   | $2.0 \times 10^{-8}$            | $6.7 \times 10^{-7}$  | $2.0 \times 10^{-6}$     | $7.3 \times 10^{-8}$  | $6.1 \times 10^{-3}$  | $2.0 \times 10^{-6}$   | $2.0 \times 10^{-2}$ |
| <b>Civil Engineering Research Facility (Bldg. 5701)</b>                        | $9.0 \times 10^{-5}$   | $1.4 \times 10^{-5}$               | $2.7 \times 10^{-5}$            | $1.2 \times 10^{-2}$   | $5.2 \times 10^{-10}$           | $6.8 \times 10^{-7}$  | $4.4 \times 10^{-6}$     | $2.1 \times 10^{-9}$  | $1.5 \times 10^{-4}$  | $5.2 \times 10^{-6}$   | $1.2 \times 10^{-2}$ |
| <b>Child Development Center-East</b>   | $1.0 \times 10^{-4}$   | $1.5 \times 10^{-5}$               | $2.9 \times 10^{-5}$            | $1.5 \times 10^{-2}$   | $1.3 \times 10^{-8}$            | $8.3 \times 10^{-7}$  | $1.8 \times 10^{-6}$     | $2.9 \times 10^{-8}$  | $3.6 \times 10^{-3}$  | $1.3 \times 10^{-6}$   | $1.8 \times 10^{-2}$ |
| <b>Child Development Center-West</b>   | $1.1 \times 10^{-4}$   | $1.7 \times 10^{-5}$               | $3.2 \times 10^{-5}$            | $1.8 \times 10^{-2}$   | $2.1 \times 10^{-9}$            | $8.4 \times 10^{-7}$  | $2.1 \times 10^{-6}$     | $8.3 \times 10^{-9}$  | $7.3 \times 10^{-4}$  | $2.0 \times 10^{-7}$   | $1.9 \times 10^{-2}$ |
| <b>Coronado Club</b>   | $1.0 \times 10^{-4}$   | $1.5 \times 10^{-5}$               | $2.9 \times 10^{-5}$            | $1.5 \times 10^{-2}$   | $1.5 \times 10^{-8}$            | $6.3 \times 10^{-7}$  | $1.8 \times 10^{-6}$     | $3.2 \times 10^{-8}$  | $4.2 \times 10^{-3}$  | $1.4 \times 10^{-6}$   | $2.0 \times 10^{-2}$ |
| <b>Coyote Canyon Control Center</b>  | $8.9 \times 10^{-5}$   | $1.4 \times 10^{-5}$               | $2.6 \times 10^{-5}$            | $1.2 \times 10^{-2}$   | $4.1 \times 10^{-10}$           | $5.7 \times 10^{-7}$  | $4.0 \times 10^{-6}$     | $2.2 \times 10^{-9}$  | $1.6 \times 10^{-4}$  | $3.9 \times 10^{-8}$   | $1.2 \times 10^{-2}$ |
| <b>Golf Course Clubhouse</b>   | $5.4 \times 10^{-4}$   | $9.0 \times 10^{-5}$               | $1.8 \times 10^{-4}$            | $7.0 \times 10^{-2}$   | $2.1 \times 10^{-8}$            | $2.0 \times 10^{-6}$  | $4.7 \times 10^{-6}$     | $1.1 \times 10^{-8}$  | $6.7 \times 10^{-4}$  | $2.0 \times 10^{-6}$   | $7.2 \times 10^{-2}$ |
| <b>Golf Course Maintenance Area</b>  | $3.4 \times 10^{-4}$   | $5.6 \times 10^{-4}$               | $1.1 \times 10^{-4}$            | $4.4 \times 10^{-2}$   | $3.8 \times 10^{-8}$            | $1.5 \times 10^{-6}$  | $3.9 \times 10^{-6}$     | $1.7 \times 10^{-8}$  | $9.7 \times 10^{-4}$  | $3.7 \times 10^{-6}$   | $4.5 \times 10^{-2}$ |
| <b>Lovelace Respiratory Research Institute</b>                                 | $8.6 \times 10^{-5}$   | $1.3 \times 10^{-5}$               | $2.5 \times 10^{-5}$            | $1.2 \times 10^{-2}$   | $3.3 \times 10^{-10}$           | $5.5 \times 10^{-10}$ | $4.0 \times 10^{-6}$     | $1.8 \times 10^{-8}$  | $1.3 \times 10^{-4}$  | $3.2 \times 10^{-8}$   | $1.2 \times 10^{-2}$ |
| <b>Kirtland Elementary School</b>  | $1.1 \times 10^{-4}$   | $1.6 \times 10^{-5}$               | $3.1 \times 10^{-5}$            | $1.8 \times 10^{-2}$   | $1.8 \times 10^{-9}$            | $8.2 \times 10^{-7}$  | $2.1 \times 10^{-6}$     | $7.6 \times 10^{-9}$  | $7.3 \times 10^{-4}$  | $1.7 \times 10^{-7}$   | $1.9 \times 10^{-2}$ |
| <b>KAFB Firestation #4 (Bldg. 9002)</b>  | $1.3 \times 10^{-4}$   | $2.0 \times 10^{-5}$               | $3.7 \times 10^{-5}$            | $1.7 \times 10^{-2}$   | $1.6 \times 10^{-10}$           | $1.3 \times 10^{-6}$  | $9.8 \times 1^{-6}$      | $2.4 \times 10^{-9}$  | $1.8 \times 10^{-4}$  | $1.6 \times 10^{-8}$   | $1.7 \times 10^{-2}$ |
| <b>KAFB Landfill</b>   | $1.9 \times 10^{-4}$   | $3.0 \times 10^{-5}$               | $5.9 \times 10^{-5}$            | $2.6 \times 1^{-2}$    | $1.5 \times 10^{-7}$            | $9.8 \times 10^{-7}$  | $2.9 \times 10^{-6}$     | $5.8 \times 10^{-8}$  | $2.4 \times 10^{-3}$  | $1.4 \times 10^{-5}$   | $2.9 \times 10^{-2}$ |
| <b>Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC)</b> | $1.3 \times 10^{-3}$   | $2.1 \times 10^{-4}$               | $4.2 \times 10^{-4}$            | $1.5 \times 10^{-1}$   | $1.0 \times 10^{-8}$            | $4.0 \times 10^{-6}$  | $7.5 \times 10^{-6}$     | $9.9 \times 10^{-9}$  | $7.4 \times 10^{-4}$  | $9.8 \times 10^{-7}$   | $1.5 \times 10^{-1}$ |
| <b>Loop Housing</b>  | $9.1 \times 10^{-5}$   | $1.4 \times 10^{-5}$               | $2.7 \times 10^{-5}$            | $1.4 \times 10^{-2}$   | $2.2 \times 10^{-8}$            | $6.0 \times 10^{-7}$  | $1.9 \times 10^{-6}$     | $5.8 \times 10^{-8}$  | $7.0 \times 10^{-3}$  | $2.1 \times 10^{-6}$   | $2.1 \times 10^{-2}$ |

**Table D.2–7. Summary of Dose Estimates to Each of the SNL/NM Receptors from No Action Alternative Emissions (continued)**

| RECEPTORS                                       | SPR                  | ACRR<br>(Mo-99)      | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF                  | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF                | ECF                  | NGF                  | RITS                  | TOTAL                |
|---|----------------------|----------------------|---------------------------------|----------------------|---------------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
|   | (Bldg.<br>6590)      | (Bldg.<br>6588)      | (Bldg.<br>6588)                 | (Bldg.<br>6580)      | (Bldg.<br>970)                  |                      | (Bldg.<br>6920)      | (Bldg.<br>905)       | (Bldg.<br>870)       | (Bldg.<br>970)        |                      |
| <i>Lovelace Hospital</i>                        | $8.4 \times 10^{-5}$ | $1.3 \times 10^{-5}$ | $2.4 \times 10^{-5}$            | $1.3 \times 10^{-2}$ | $4.1 \times 10^{-9}$            | $7.2 \times 10^{-7}$ | $2.4 \times 10^{-6}$ | $1.3 \times 10^{-8}$ | $1.2 \times 10^{-3}$ | $4.1 \times 10^{-7}$  | $1.4 \times 10^{-2}$ |
| <i>Manzano Offices<br/>(Fire Station)</i>       | $2.7 \times 10^{-4}$ | $4.3 \times 10^{-5}$ | $8.6 \times 10^{-5}$            | $3.3 \times 10^{-2}$ | $2.6 \times 10^{-9}$            | $1.2 \times 10^{-6}$ | $4.9 \times 10^{-6}$ | $5.1 \times 10^{-9}$ | $3.5 \times 10^{-4}$ | $2.6 \times 10^{-7}$  | $3.4 \times 10^{-2}$ |
| <i>Maxwell Housing</i>                          | $1.3 \times 10^{-4}$ | $1.9 \times 10^{-5}$ | $3.7 \times 10^{-5}$            | $2.1 \times 10^{-2}$ | $3.0 \times 10^{-9}$            | $9.0 \times 10^{-7}$ | $2.3 \times 10^{-6}$ | $1.0 \times 10^{-8}$ | $9.4 \times 10^{-4}$ | $2.9 \times 10^{-6}$  | $2.2 \times 10^{-2}$ |
| <i>National Atomic Museum</i>                   | $1.2 \times 10^{-4}$ | $1.9 \times 10^{-5}$ | $3.6 \times 10^{-5}$            | $1.8 \times 10^{-2}$ | $3.3 \times 10^{-8}$            | $1.0 \times 10^{-6}$ | $2.1 \times 10^{-6}$ | $5.2 \times 10^{-8}$ | $7.2 \times 10^{-3}$ | $2.4 \times 10^{-6}$  | $2.5 \times 10^{-2}$ |
| <i>Pershing Park Housing</i>                    | $7.6 \times 10^{-5}$ | $1.4 \times 10^{-5}$ | $2.7 \times 10^{-5}$            | $1.4 \times 10^{-2}$ | $1.1 \times 10^{-8}$            | $5.3 \times 10^{-7}$ | $1.7 \times 10^{-6}$ | $3.2 \times 10^{-8}$ | $3.5 \times 10^{-3}$ | $1.1 \times 10^{-6}$  | $1.7 \times 10^{-2}$ |
| <i>Riding Club/Stables</i>                      | $5.1 \times 10^{-4}$ | $8.8 \times 10^{-5}$ | $1.8 \times 10^{-4}$            | $6.2 \times 10^{-2}$ | $5.5 \times 10^{-9}$            | $1.8 \times 10^{-6}$ | $5.5 \times 10^{-6}$ | $8.5 \times 10^{-8}$ | $4.5 \times 10^{-4}$ | $5.2 \times 10^{-7}$  | $6.3 \times 10^{-2}$ |
| <i>Sandia Base Elementary</i>                   | $7.8 \times 10^{-5}$ | $1.2 \times 10^{-5}$ | $2.3 \times 10^{-5}$            | $1.2 \times 10^{-2}$ | $1.3 \times 10^{-8}$            | $6.1 \times 10^{-7}$ | $2.5 \times 10^{-6}$ | $3.2 \times 10^{-8}$ | $4.1 \times 10^{-3}$ | $1.3 \times 10^{-6}$  | $1.7 \times 10^{-2}$ |
| <i>Sandia Federal Credit Union</i>              | $1.3 \times 10^{-4}$ | $2.0 \times 10^{-5}$ | $3.8 \times 10^{-5}$            | $1.9 \times 10^{-2}$ | $4.1 \times 10^{-8}$            | $6.9 \times 10^{-7}$ | $2.1 \times 10^{-6}$ | $9.7 \times 10^{-7}$ | $1.2 \times 10^{-2}$ | $4.1 \times 10^{-6}$  | $3.1 \times 10^{-2}$ |
| <i>Shandiin Day Care Center</i>                 | $1.2 \times 10^{-4}$ | $1.8 \times 10^{-5}$ | $3.4 \times 10^{-5}$            | $1.7 \times 10^{-2}$ | $2.0 \times 10^{-8}$            | $9.7 \times 10^{-7}$ | $2.0 \times 10^{-6}$ | $3.5 \times 10^{-8}$ | $4.6 \times 10^{-3}$ | $1.9 \times 10^{-6}$  | $2.2 \times 10^{-2}$ |
| <i>Sunport (Bldg. 760)</i>                      | $1.4 \times 10^{-4}$ | $3.6 \times 10^{-5}$ | $7.0 \times 10^{-5}$            | $3.7 \times 10^{-2}$ | $1.6 \times 10^{-8}$            | $1.0 \times 10^{-6}$ | $3.2 \times 10^{-6}$ | $2.4 \times 10^{-8}$ | $1.7 \times 10^{-3}$ | $1.6 \times 10^{-6}$  | $3.9 \times 10^{-2}$ |
| <i>Sunport (Bldg. 1064)</i>                     | $1.1 \times 10^{-4}$ | $1.7 \times 10^{-5}$ | $3.2 \times 10^{-5}$            | $1.6 \times 10^{-2}$ | $1.1 \times 10^{-8}$            | $8.2 \times 10^{-7}$ | $2.8 \times 10^{-6}$ | $2.3 \times 10^{-8}$ | $2.0 \times 10^{-3}$ | $1.1 \times 10^{-6}$  | $1.8 \times 10^{-2}$ |
| <i>Technical Onsite<br/>Inspection Facility</i> | $1.9 \times 10^{-4}$ | $3.0 \times 10^{-5}$ | $5.9 \times 10^{-5}$            | $2.8 \times 10^{-2}$ | $3.1 \times 10^{-7}$            | $9.7 \times 10^{-7}$ | $2.7 \times 10^{-6}$ | $6.9 \times 10^{-9}$ | $3.9 \times 10^{-3}$ | $2.9 \times 10^{-5}$  | $3.3 \times 10^{-2}$ |
| <i>Veterans Affairs<br/>Medical Center</i>      | $1.6 \times 10^{-4}$ | $2.3 \times 10^{-5}$ | $4.5 \times 10^{-5}$            | $2.5 \times 10^{-2}$ | $5.2 \times 10^{-9}$            | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$ | $1.4 \times 10^{-8}$ | $1.4 \times 10^{-3}$ | $5.1 \times 10^{-7}$  | $2.7 \times 10^{-2}$ |
| <i>Wherry Elementary School</i>                 | $9.8 \times 10^{-5}$ | $1.5 \times 10^{-5}$ | $2.8 \times 10^{-5}$            | $1.5 \times 10^{-2}$ | $1.0 \times 10^{-8}$            | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$ | $2.4 \times 10^{-8}$ | $2.9 \times 10^{-3}$ | $9.8 \times 10^{-7}$  | $1.8 \times 10^{-2}$ |
| <i>Zia Park Housing</i>                         | $1.2 \times 10^{-4}$ | $1.9 \times 10^{-5}$ | $3.7 \times 10^{-5}$            | $1.9 \times 10^{-2}$ | $2.2 \times 10^{-8}$            | $8.9 \times 10^{-7}$ | $2.9 \times 10^{-6}$ | $4.2 \times 10^{-8}$ | $3.9 \times 10^{-3}$ | $2.1 \times 10^{-6}$  | $2.4 \times 10^{-2}$ |
| <b>OFFSITE POTENTIAL MEI (mrem/yr)</b>          |                      |                      |                                 |                      |                                 |                      |                      |                      |                      |                       |                      |
| <i>Albuquerque City Offices</i>                 | $1.9 \times 10^{-4}$ | $4.4 \times 10^{-5}$ | $5.4 \times 10^{-5}$            | $4.1 \times 10^{-2}$ | $5.5 \times 10^{-9}$            | $6.4 \times 10^{-6}$ | $2.2 \times 10^{-5}$ | $1.3 \times 10^{-7}$ | $1.0 \times 10^{-2}$ | $1.2 \times 10^{-8}$  | $5.1 \times 10^{-2}$ |
| <i>East Resident</i>                            | $1.2 \times 10^{-5}$ | $1.8 \times 10^{-5}$ | $3.4 \times 10^{-6}$            | $1.4 \times 10^{-2}$ | $1.5 \times 10^{-11}$           | $4.3 \times 10^{-6}$ | $1.7 \times 10^{-5}$ | $1.2 \times 10^{-7}$ | $9.5 \times 10^{-3}$ | $3.2 \times 10^{-11}$ | $2.4 \times 10^{-2}$ |
| <i>Eubank Gate Area<br/>(Bldg. 8895)</i>        | $1.0 \times 10^{-4}$ | $3.3 \times 10^{-5}$ | $3.2 \times 10^{-5}$            | $2.8 \times 10^{-2}$ | $2.8 \times 10^{-8}$            | $4.9 \times 10^{-6}$ | $1.9 \times 10^{-5}$ | $1.9 \times 10^{-7}$ | $1.7 \times 10^{-2}$ | $6.1 \times 10^{-8}$  | $4.5 \times 10^{-2}$ |

**Table D.2–7. Summary of Dose Estimates to Each of the SNL/NM Receptors from No Action Alternative Emissions (concluded)**

| RECEPTORS                                  | SPR                   | ACRR<br>(Mo-99)<br>(Bldg.<br>6590) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF                  | HERMES<br>III<br>(Bldg.<br>970) | MWL                   | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|--|-----------------------|------------------------------------|---------------------------------|----------------------|---------------------------------|-----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
|  | (Bldg.<br>6590)       | (Bldg.<br>6588)                    | (Bldg.<br>6588)                 | (Bldg.<br>6580)      | (Bldg.<br>970)                  |                       |                          |                       |                       |                        |                      |
| <b>Four Hills Subdivision</b>              | $1.2 \times 10^{-4}$  | $3.5 \times 10^{-5}$               | $3.6 \times 10^{-5}$            | $3.1 \times 10^{-2}$ | $8.6 \times 10^{-9}$            | $4.9 \times 10^{-6}$  | $1.9 \times 10^{-5}$     | $1.3 \times 10^{-7}$  | $1.0 \times 10^{-2}$  | $1.9 \times 10^{-8}$   | $4.1 \times 10^{-2}$ |
| <b>Isleta Gaming Palace</b>                | $2.7 \times 10^{-5}$  | $2.0 \times 10^{-5}$               | $7.7 \times 10^{-6}$            | $1.7 \times 10^{-2}$ | $4.1 \times 10^{-11}$           | $4.6 \times 10^{-6}$  | $9.1 \times 10^{-5}$     | $1.2 \times 10^{-7}$  | $9.6 \times 10^{-3}$  | $9.0 \times 10^{-11}$  | $2.7 \times 10^{-2}$ |
| <b>Northeast Resident</b>                  | $5.3 \times 10^{-5}$  | $2.4 \times 10^{-5}$               | $1.6 \times 10^{-5}$            | $2.0 \times 10^{-2}$ | $8.3 \times 10^{-10}$           | $4.5 \times 10^{-6}$  | $1.8 \times 10^{-6}$     | $1.2 \times 10^{-7}$  | $9.6 \times 10^{-3}$  | $1.8 \times 10^{-9}$   | $3.0 \times 10^{-2}$ |
| <b>Seismic Center (USGS)</b>               | $3.3 \times 10^{-5}$  | $2.1 \times 10^{-5}$               | $9.6 \times 10^{-6}$            | $1.7 \times 10^{-2}$ | $1.1 \times 10^{-10}$           | $4.4 \times 10^{-6}$  | $1.8 \times 10^{-5}$     | $1.2 \times 10^{-7}$  | $9.5 \times 10^{-3}$  | $2.3 \times 10^{-10}$  | $2.7 \times 10^{-2}$ |
| <b>Tijeras Arroyo (West)</b>               | $2.7 \times 10^{-4}$  | $5.7 \times 10^{-5}$               | $7.8 \times 10^{-5}$            | $5.3 \times 10^{-2}$ | $7.9 \times 10^{-9}$            | $7.5 \times 10^{-6}$  | $2.4 \times 10^{-5}$     | $1.3 \times 10^{-7}$  | $1.0 \times 10^{-2}$  | $1.7 \times 10^{-8}$   | $6.3 \times 10^{-2}$ |
| <b>POPULATION DOSE<br/>(person-rem/yr)</b> | $2.54 \times 10^{-2}$ | $5.35 \times 10^{-3}$              | $7.2 \times 10^{-3}$            | 4.61                 | $2.1 \times 10^{-7}$            | $6.16 \times 10^{-4}$ | $3.24 \times 10^{-3}$    | $4.19 \times 10^{-6}$ | 0.322                 | $4.5 \times 10^{-7}$   | 5.0                  |

Sources: DOE 1997e, SNL/NM 1998a

ACRR: Annular Core Research Reactor

DP: Defense Programs

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES III: High-Energy Radiation Megavolt Electron Source III

KAFB: Kirtland Air Force Base

MEI: maximally exposed individual

Mo-99: molybdenum-99 and other medical isotopes production

mrem/yr: millirems per year

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

rem: Roentgen equivalent, man

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

USGS: U.S. Geological Survey

**Table D.2–8. Summary of Dose Estimates to each of the SNL/NM Receptors from Expanded Operations Alternative Emissions from each SNL/NM Facility<sup>a</sup>**

| RECEPTORS  | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|--|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <b>ONSITE and/or SPECIAL POTENTIAL MEI (mrem/yr)</b>                           |                        |                                    |                                 |                        |                                 |                      |                          |                       |                       |                        |                      |
| <i>Building 20706</i>  | $4.6 \times 10^{-4}$   | $4.5 \times 10^{-5}$               | $1.3 \times 10^{-4}$            | 0.072                  | $2.1 \times 10^{-7}$            | $7.8 \times 10^{-7}$ | $2.3 \times 10^{-6}$     | $1.0 \times 10^{-7}$  | $5.6 \times 10^{-3}$  | $9.3 \times 10^{-6}$   | $7.8 \times 10^{-2}$ |
| <i>Building 24499</i>  | $3.0 \times 10^{-4}$   | $3.0 \times 10^{-5}$               | $8.6 \times 10^{-5}$            | 0.048                  | $5.9 \times 10^{-8}$            | $6.0 \times 10^{-7}$ | $2.0 \times 10^{-6}$     | $7.3 \times 10^{-8}$  | $6.1 \times 10^{-3}$  | $2.6 \times 10^{-6}$   | $5.5 \times 10^{-2}$ |
| <i>Civil Engineering Research Facility (Bldg. 5701)</i>                        | $2.8 \times 10^{-4}$   | $2.8 \times 10^{-5}$               | $8.0 \times 10^{-5}$            | 0.039                  | $1.5 \times 10^{-9}$            | $6.8 \times 10^{-7}$ | $4.4 \times 10^{-6}$     | $2.1 \times 10^{-9}$  | $1.5 \times 10^{-4}$  | $6.9 \times 10^{-8}$   | $4.0 \times 10^{-2}$ |
| <i>Child Development Center-East</i>   | $3.2 \times 10^{-4}$   | $3.0 \times 10^{-5}$               | $8.6 \times 10^{-5}$            | 0.05                   | $3.9 \times 10^{-8}$            | $8.3 \times 10^{-7}$ | $1.8 \times 10^{-6}$     | $2.9 \times 10^{-8}$  | $3.6 \times 10^{-3}$  | $1.7 \times 10^{-6}$   | $5.4 \times 10^{-2}$ |
| <i>Child Development Center-West</i>   | $3.6 \times 10^{-4}$   | $3.3 \times 10^{-5}$               | $9.5 \times 10^{-5}$            | 0.061                  | $6.0 \times 10^{-9}$            | $8.4 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $8.3 \times 10^{-9}$  | $7.3 \times 10^{-4}$  | $2.7 \times 10^{-7}$   | $6.2 \times 10^{-2}$ |
| <i>Coronado Club</i>   | $3.2 \times 10^{-4}$   | $3.0 \times 10^{-5}$               | $8.7 \times 10^{-5}$            | 0.05                   | $4.4 \times 10^{-8}$            | $6.3 \times 10^{-7}$ | $1.8 \times 10^{-6}$     | $3.2 \times 10^{-8}$  | $4.2 \times 10^{-3}$  | $1.9 \times 10^{-6}$   | $5.5 \times 10^{-2}$ |
| <i>Coyote Canyon Control Center</i>  | $2.8 \times 10^{-4}$   | $2.7 \times 10^{-5}$               | $7.9 \times 10^{-5}$            | 0.039                  | $1.2 \times 10^{-9}$            | $5.7 \times 10^{-7}$ | $4.0 \times 10^{-6}$     | $2.2 \times 10^{-9}$  | $1.6 \times 10^{-4}$  | $5.2 \times 10^{-8}$   | $4.0 \times 10^{-2}$ |
| <i>Golf Course Clubhouse</i>   | $1.7 \times 10^{-3}$   | $1.8 \times 10^{-4}$               | $5.4 \times 10^{-4}$            | 0.23                   | $6.2 \times 10^{-8}$            | $2.0 \times 10^{-6}$ | $4.7 \times 10^{-6}$     | $1.1 \times 10^{-8}$  | $6.7 \times 10^{-4}$  | $2.7 \times 10^{-6}$   | $2.3 \times 10^{-1}$ |
| <i>Golf Course Maintenance Area</i>  | $1.1 \times 10^{-3}$   | $1.1 \times 10^{-4}$               | $3.3 \times 10^{-4}$            | 0.15                   | $1.1 \times 10^{-7}$            | $1.5 \times 10^{-6}$ | $3.9 \times 10^{-6}$     | $1.7 \times 10^{-8}$  | $9.7 \times 10^{-4}$  | $4.9 \times 10^{-6}$   | $1.5 \times 10^{-1}$ |
| <i>Lovelace Respiratory Research Institute</i>                                 | $2.7 \times 10^{-4}$   | $2.6 \times 10^{-5}$               | $7.4 \times 10^{-5}$            | 0.041                  | $9.5 \times 10^{-10}$           | $5.5 \times 10^{-7}$ | $4.0 \times 10^{-6}$     | $1.8 \times 10^{-9}$  | $1.3 \times 10^{-4}$  | $4.2 \times 10^{-8}$   | $4.2 \times 10^{-2}$ |
| <i>Kirtland Elementary School</i>  | $3.5 \times 10^{-4}$   | $3.3 \times 10^{-5}$               | $9.3 \times 10^{-5}$            | 0.06                   | $5.2 \times 10^{-9}$            | $8.2 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $7.6 \times 10^{-9}$  | $7.3 \times 10^{-4}$  | $2.3 \times 10^{-7}$   | $6.1 \times 10^{-2}$ |
| <i>KAFB Firestation #4 (Bldg. 9002)</i>  | $4.0 \times 10^{-4}$   | $4.0 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.058                  | $4.6 \times 10^{-10}$           | $1.3 \times 10^{-6}$ | $9.8 \times 10^{-6}$     | $2.4 \times 10^{-9}$  | $1.8 \times 10^{-4}$  | $2.1 \times 10^{-8}$   | $5.9 \times 10^{-2}$ |
| <i>KAFB Landfill</i>   | $6.0 \times 10^{-4}$   | $6.1 \times 10^{-5}$               | $1.8 \times 10^{-4}$            | 0.088                  | $4.2 \times 10^{-7}$            | $9.8 \times 10^{-7}$ | $2.9 \times 10^{-6}$     | $5.8 \times 10^{-8}$  | $2.4 \times 10^{-3}$  | $1.8 \times 10^{-5}$   | $9.1 \times 10^{-2}$ |
| <i>Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC)</i> | $4.3 \times 10^{-3}$   | $4.2 \times 10^{-4}$               | $1.3 \times 10^{-3}$            | 0.50                   | $3.0 \times 10^{-8}$            | $4.0 \times 10^{-6}$ | $7.5 \times 10^{-6}$     | $9.9 \times 10^{-9}$  | $7.4 \times 10^{-4}$  | $1.3 \times 10^{-6}$   | $5.1 \times 10^{-1}$ |

**Table D.2–8. Summary of Dose Estimates to each of the SNL/NM Receptors from Expanded Operations Alternative Emissions from each SNL/NM Facility<sup>a</sup> (continued)**

| RECEPTORS                                   | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|---|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <i>Loop Housing</i>                         | $2.9 \times 10^{-4}$   | $2.9 \times 10^{-5}$               | $8.2 \times 10^{-5}$            | 0.046                  | $6.3 \times 10^{-8}$            | $6.0 \times 10^{-7}$ | $1.9 \times 10^{-6}$     | $5.8 \times 10^{-8}$  | $7.0 \times 10^{-3}$  | $2.8 \times 10^{-6}$   | $5.3 \times 10^{-2}$ |
| <i>Lovelace Hospital</i>                    | $2.6 \times 10^{-4}$   | $2.5 \times 10^{-5}$               | $7.2 \times 10^{-5}$            | 0.043                  | $1.2 \times 10^{-8}$            | $7.2 \times 10^{-7}$ | $2.4 \times 10^{-6}$     | $1.3 \times 10^{-8}$  | $1.2 \times 10^{-3}$  | $5.4 \times 10^{-7}$   | $4.5 \times 10^{-2}$ |
| <i>Manzano Offices<br/>(Fire Station)</i>   | $8.6 \times 10^{-4}$   | $8.7 \times 10^{-5}$               | $2.6 \times 10^{-4}$            | 0.11                   | $7.6 \times 10^{-9}$            | $1.2 \times 10^{-6}$ | $4.9 \times 10^{-6}$     | $5.1 \times 10^{-9}$  | $3.5 \times 10^{-4}$  | $3.4 \times 10^{-7}$   | $1.1 \times 10^{-1}$ |
| <i>Maxwell Housing</i>                      | $4.1 \times 10^{-4}$   | $3.9 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.070                  | $8.6 \times 10^{-9}$            | $9.0 \times 10^{-9}$ | $2.3 \times 10^{-6}$     | $1.0 \times 10^{-8}$  | $9.4 \times 10^{-4}$  | $3.8 \times 10^{-7}$   | $7.2 \times 10^{-2}$ |
| <i>National Atomic Museum</i>               | $3.9 \times 10^{-4}$   | $3.7 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.061                  | $9.5 \times 10^{-8}$            | $1.0 \times 10^{-6}$ | $2.1 \times 10^{-6}$     | $5.2 \times 10^{-8}$  | $7.2 \times 10^{-3}$  | $3.2 \times 10^{-6}$   | $6.9 \times 10^{-2}$ |
| <i>Pershing Park Housing</i>                | $2.4 \times 10^{-4}$   | $2.8 \times 10^{-5}$               | $8.0 \times 10^{-5}$            | 0.047                  | $3.2 \times 10^{-8}$            | $5.3 \times 10^{-7}$ | $1.7 \times 10^{-6}$     | $3.2 \times 10^{-8}$  | $3.5 \times 10^{-3}$  | $1.4 \times 10^{-6}$   | $5.1 \times 10^{-2}$ |
| <i>Riding Stables</i>                       | $1.6 \times 10^{-3}$   | $1.8 \times 10^{-4}$               | $5.3 \times 10^{-4}$            | 0.21                   | $1.6 \times 10^{-8}$            | $1.8 \times 10^{-6}$ | $5.5 \times 10^{-6}$     | $8.5 \times 10^{-8}$  | $4.5 \times 10^{-4}$  | $6.9 \times 10^{-7}$   | $2.1 \times 10^{-1}$ |
| <i>Sandia Base Elementary</i>               | $2.5 \times 10^{-4}$   | $2.4 \times 10^{-5}$               | $6.8 \times 10^{-5}$            | 0.039                  | $3.8 \times 10^{-8}$            | $6.1 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $3.2 \times 10^{-8}$  | $4.1 \times 10^{-3}$  | $1.7 \times 10^{-6}$   | $4.3 \times 10^{-2}$ |
| <i>Sandia Federal Credit Union</i>          | $4.0 \times 10^{-4}$   | $3.9 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.064                  | $1.2 \times 10^{-7}$            | $6.9 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $9.7 \times 10^{-8}$  | $1.2 \times 10^{-2}$  | $5.4 \times 10^{-6}$   | $7.7 \times 10^{-2}$ |
| <i>Shandiin Day Care Center</i>             | $3.7 \times 10^{-4}$   | $3.6 \times 10^{-5}$               | $1.0 \times 10^{-4}$            | 0.058                  | $5.8 \times 10^{-8}$            | $9.7 \times 10^{-7}$ | $2.0 \times 10^{-6}$     | $3.5 \times 10^{-8}$  | $4.6 \times 10^{-3}$  | $2.5 \times 10^{-6}$   | $6.3 \times 10^{-2}$ |
| <i>Sunport (Bldg. 1064)</i>                 | $3.4 \times 10^{-4}$   | $3.3 \times 10^{-5}$               | $9.5 \times 10^{-5}$            | 0.055                  | $3.2 \times 10^{-8}$            | $8.2 \times 10^{-7}$ | $2.8 \times 10^{-6}$     | $2.3 \times 10^{-8}$  | $2.0 \times 10^{-3}$  | $1.4 \times 10^{-6}$   | $5.7 \times 10^{-2}$ |
| <i>Sunport (Bldg. 760)</i>                  | $4.3 \times 10^{-4}$   | $7.1 \times 10^{-5}$               | $2.1 \times 10^{-4}$            | 0.12                   | $4.7 \times 10^{-8}$            | $1.0 \times 10^{-6}$ | $3.2 \times 10^{-6}$     | $2.4 \times 10^{-8}$  | $1.7 \times 10^{-3}$  | $2.1 \times 10^{-6}$   | $1.2 \times 10^{-1}$ |
| <i>Technical Onsite Inspection Facility</i> | $6.1 \times 10^{-4}$   | $6.0 \times 10^{-5}$               | $1.8 \times 10^{-4}$            | 0.093                  | $8.9 \times 10^{-7}$            | $9.7 \times 10^{-7}$ | $2.7 \times 10^{-6}$     | $6.9 \times 10^{-9}$  | $3.9 \times 10^{-3}$  | $3.8 \times 10^{-5}$   | $9.8 \times 10^{-2}$ |
| <i>Veterans Affairs Medical Center</i>      | $5.0 \times 10^{-4}$   | $4.6 \times 10^{-5}$               | $1.3 \times 10^{-4}$            | 0.082                  | $1.5 \times 10^{-8}$            | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $1.4 \times 10^{-8}$  | $1.4 \times 10^{-3}$  | $6.8 \times 10^{-7}$   | $8.4 \times 10^{-2}$ |
| <i>Wherry Elementary School</i>             | $3.1 \times 10^{-4}$   | $2.9 \times 10^{-5}$               | $8.4 \times 10^{-5}$            | 0.049                  | $3.0 \times 10^{-8}$            | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $2.4 \times 10^{-8}$  | $2.9 \times 10^{-3}$  | $1.3 \times 10^{-6}$   | $5.2 \times 10^{-2}$ |
| <i>Zia Park Housing</i>                     | $3.9 \times 10^{-4}$   | $3.8 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.062                  | $6.4 \times 10^{-8}$            | $8.9 \times 10^{-7}$ | $2.9 \times 10^{-6}$     | $4.2 \times 10^{-8}$  | $3.9 \times 10^{-3}$  | $2.8 \times 10^{-6}$   | $6.6 \times 10^{-2}$ |

**Table D.2–8. Summary of Dose Estimates to each of the SNL/NM Receptors from Expanded Operations Alternative Emissions from each SNL/NM Facility<sup>a</sup> (concluded)**

| RECEPTORS                                | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970)         | MWL                                     | RMWMF<br>(Bldg.<br>6920)                | ECF<br>(Bldg.<br>905)                   | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970)                  | TOTAL                |
|--|------------------------|------------------------------------|---------------------------------|------------------------|---|---|---|---|-----------------------|---|----------------------|
| <b>OFFSITE POTENTIAL MEI (mrem/yr)</b>   |                        |                                    |                                 |                        |   |   |   |   |                       |   |                      |
| <i>Albuquerque City Offices</i>          | $6.0 \times 10^{-4}$   | $8.910^{-5}$                       | $1.6 \times 10^{-4}$            | 0.14                   | $1.6 \times 10^{-8}$                    | $6.4 \times 10^{-6}$                    | $2.2 \times 10^{-5}$                    | $1.3 \times 10^{-7}$                    | $1.0 \times 10^{-2}$  | $7.2 \times 10^{-7}$                    | $1.5 \times 10^{-1}$ |
| <i>East Resident</i>                     | $3.7 \times 10^{-5}$   | $3.5 \times 10^{-5}$               | $1.0 \times 10^{-5}$            | 0.048                  | $4.2 \times 10^{-11}$                   | $4.3 \times 10^{-6}$                    | $1.7 \times 10^{-5}$                    | $1.2 \times 10^{-7}$                    | $9.5 \times 10^{-3}$  | $1.9 \times 10^{-9}$                    | $5.8 \times 10^{-2}$ |
| <i>Eubank Gate Area<br/>(Bldg. 8895)</i> | $3.3 \times 10^{-4}$   | $6.5 \times 10^{-5}$               | $9.5 \times 10^{-5}$            | 0.095                  | $8.1 \times 10^{-8}$                    | $4.9 \times 10^{-6}$                    | $1.9 \times 10^{-5}$                    | $1.9 \times 10^{-7}$                    | $1.7 \times 10^{-2}$  | $3.6 \times 10^{-6}$                    | $1.1 \times 10^{-1}$ |
| <i>Four Hills Subdivision</i>            | $3.8 \times 10^{-4}$   | $7.0 \times 10^{-5}$               | $1.1 \times 10^{-4}$            | 0.10                   | $2.5 \times 10^{-8}$                    | $4.9 \times 10^{-6}$                    | $1.9 \times 10^{-5}$                    | $1.3 \times 10^{-7}$                    | $1.0 \times 10^{-2}$  | $1.1 \times 10^{-6}$                    | $1.1 \times 10^{-1}$ |
| <i>Isleta Gaming Palace</i>              | $8.6 \times 10^{-5}$   | $4.0 \times 10^{-5}$               | $2.3 \times 10^{-5}$            | 0.056                  | $1.2 \times 10^{-10}$                   | $4.6 \times 10^{-6}$                    | $2.1 \times 10^{-5}$                    | $1.2 \times 10^{-7}$                    | $9.6 \times 10^{-3}$  | $5.1 \times 10^{-9}$                    | $6.6 \times 10^{-2}$ |
| <i>Northeast Resident</i>                | $1.7 \times 10^{-4}$   | $4.8 \times 10^{-5}$               | $4.7 \times 10^{-5}$            | 0.068                  | $2.4 \times 10^{-9}$                    | $4.5 \times 10^{-6}$                    | $1.8 \times 10^{-5}$                    | $1.2 \times 10^{-7}$                    | $9.6 \times 10^{-3}$  | $1.1 \times 10^{-7}$                    | $7.8 \times 10^{-2}$ |
| <i>Seismic Center (USGS)</i>             | $1.1 \times 10^{-4}$   | $4.2 \times 10^{-5}$               | $2.9 \times 10^{-5}$            | 0.058                  | $3.1 \times 10^{-10}$                   | $4.4 \times 10^{-6}$                    | $1.8 \times 10^{-5}$                    | $1.2 \times 10^{-7}$                    | $9.5 \times 10^{-3}$  | $1.4 \times 10^{-8}$                    | $6.8 \times 10^{-2}$ |
| <i>Tijeras Arroyo (West)</i>             | $8.6 \times 10^{-4}$   | $1.1 \times 10^{-4}$               | $2.3 \times 10^{-4}$            | 0.18                   | $2.3 \times 10^{-8}$                    | $7.5 \times 10^{-6}$                    | $2.4 \times 10^{-5}$                    | $1.3 \times 10^{-7}$                    | $1.0 \times 10^{-2}$  | $1.010^{-6}$                            | $1.9 \times 10^{-1}$ |
| <b>POPULATION DOSE<br/>(person-rem)</b>  | <b>0.0801</b>          | <b>0.0107</b>                      | <b>0.0216</b>                   | <b>15.4</b>            | <b><math>6.06 \times 10^{-7}</math></b> | <b><math>6.16 \times 10^{-4}</math></b> | <b><math>3.24 \times 10^{-3}</math></b> | <b><math>4.19 \times 10^{-6}</math></b> | <b>0.322</b>          | <b><math>2.69 \times 10^{-5}</math></b> | <b>15.8</b>          |

Sources: DOE 1997e, SNL/NM 1998a

ACRR: Annular Core Research Reactor

DP: Defense Programs

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES II: High-Energy Radiation Megavolt Electron Source II

KAFB: Kirtland Air Force Base

MEI: maximally exposed individual

Mo-99: molybdenum-99 and other medical isotopes production

mrem/yr: millirems per year

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

rem: Roentgen equivalent, man

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

USGS: U.S. Geological Survey

<sup>a</sup>If implemented, the Microsystems and Engineering Sciences Applications (MESA) Complex configuration would not change the dose estimates under the Expanded Operations Alternative.

**Table D.2–9. Summary of Dose Estimates to each of the SNL/NM Receptors from Reduced Operations Alternative Emissions from each SNL/NM Facility**

| RECEPTORS  | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|--|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <b>ONSITE and/or SPECIAL POTENTIAL MEI (mrem/yr)</b>                           |                        |                                    |                                 |                        |                                 |                      |                          |                       |                       |                        |                      |
| <i>Building 20706</i>  | $4.4 \times 10^{-5}$   | $4.9 \times 10^{-6}$               | 0                               | $2.2 \times 10^{-3}$   | $5.8 \times 10^{-9}$            | $7.8 \times 10^{-7}$ | $2.3 \times 10^{-6}$     | $1.0 \times 10^{-8}$  | $5.6 \times 10^{-3}$  | $1.2 \times 10^{-6}$   | $7.8 \times 10^{-3}$ |
| <i>Building 24499</i>  | $2.9 \times 10^{-5}$   | $3.3 \times 10^{-6}$               | 0                               | $1.4 \times 10^{-3}$   | $1.6 \times 10^{-9}$            | $6.0 \times 10^{-7}$ | $2.0 \times 10^{-6}$     | $7.3 \times 10^{-9}$  | $6.1 \times 10^{-3}$  | $3.3 \times 10^{-7}$   | $7.5 \times 10^{-3}$ |
| <i>Civil Engineering Research Facility (Bldg. 5701)</i>                        | $2.7 \times 10^{-5}$   | $3.1 \times 10^{-6}$               | 0                               | $1.2 \times 10^{-3}$   | $4.2 \times 10^{-11}$           | $6.8 \times 10^{-7}$ | $4.4 \times 10^{-6}$     | $2.1 \times 10^{-10}$ | $1.5 \times 10^{-4}$  | $8.6 \times 10^{-9}$   | $1.4 \times 10^{-3}$ |
| <i>Child Development Center-East</i>   | $3.0 \times 10^{-5}$   | $3.3 \times 10^{-6}$               | 0                               | $1.5 \times 10^{-3}$   | $1.1 \times 10^{-9}$            | $8.3 \times 10^{-7}$ | $1.8 \times 10^{-6}$     | $2.9 \times 10^{-9}$  | $3.6 \times 10^{-3}$  | $2.1 \times 10^{-7}$   | $5.1 \times 10^{-3}$ |
| <i>Child Development Center-West</i>   | $3.4 \times 10^{-5}$   | $3.6 \times 10^{-6}$               | 0                               | $1.8 \times 10^{-3}$   | $1.7 \times 10^{-10}$           | $8.4 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $8.3 \times 10^{-10}$ | $7.3 \times 10^{-4}$  | $3.4 \times 10^{-8}$   | $2.6 \times 10^{-3}$ |
| <i>Coronado Club</i>   | $3.0 \times 10^{-5}$   | $3.3 \times 10^{-6}$               | 0                               | $1.5 \times 10^{-3}$   | $1.2 \times 10^{-9}$            | $6.3 \times 10^{-7}$ | $1.8 \times 10^{-6}$     | $3.2 \times 10^{-9}$  | $4.2 \times 10^{-3}$  | $2.4 \times 10^{-7}$   | $5.7 \times 10^{-3}$ |
| <i>Coyote Canyon Control Center</i>  | $2.7 \times 10^{-5}$   | $2.9 \times 10^{-6}$               | 0                               | $1.2 \times 10^{-3}$   | $3.3 \times 10^{-11}$           | $5.7 \times 10^{-7}$ | $4.0 \times 10^{-6}$     | $2.2 \times 10^{-10}$ | $1.6 \times 10^{-4}$  | $6.5 \times 10^{-9}$   | $1.4 \times 10^{-3}$ |
| <i>Golf Course Clubhouse</i>   | $1.6 \times 10^{-4}$   | $2.0 \times 10^{-5}$               | 0                               | $7.0 \times 10^{-3}$   | $1.7 \times 10^{-9}$            | $2.0 \times 10^{-6}$ | $4.7 \times 10^{-6}$     | $1.1 \times 10^{-9}$  | $6.7 \times 10^{-4}$  | $3.4 \times 10^{-7}$   | $7.9 \times 10^{-3}$ |
| <i>Golf Course Maintenance Area</i>  | $1.0 \times 10^{-4}$   | $1.2 \times 10^{-5}$               | 0                               | $4.4 \times 10^{-3}$   | $3.1 \times 10^{-9}$            | $1.5 \times 10^{-6}$ | $3.9 \times 10^{-6}$     | $1.7 \times 10^{-9}$  | $9.7 \times 10^{-4}$  | $6.1 \times 10^{-7}$   | $5.5 \times 10^{-3}$ |
| <i>Lovelace Respiratory Research Institute</i>                                 | $2.6 \times 10^{-5}$   | $2.8 \times 10^{-6}$               | 0                               | $1.2 \times 10^{-3}$   | $2.6 \times 10^{-11}$           | $5.5 \times 10^{-7}$ | $4.0 \times 10^{-6}$     | $1.8 \times 10^{-10}$ | $1.3 \times 10^{-4}$  | $5.3 \times 10^{-9}$   | $1.4 \times 10^{-3}$ |
| <i>Kirtland Elementary School</i>  | $3.3 \times 10^{-5}$   | $3.6 \times 10^{-6}$               | 0                               | $1.8 \times 10^{-3}$   | $1.4 \times 10^{-10}$           | $8.2 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $7.6 \times 10^{-10}$ | $7.3 \times 10^{-4}$  | $2.9 \times 10^{-8}$   | $2.5 \times 10^{-3}$ |
| <i>KAFB Firestation #4 (Bldg. 9002)</i>  | $3.8 \times 10^{-5}$   | $3.7 \times 10^{-6}$               | 0                               | $1.7 \times 10^{-3}$   | $1.3 \times 10^{-11}$           | $1.3 \times 10^{-6}$ | $9.8 \times 10^{-6}$     | $2.4 \times 10^{-10}$ | $1.8 \times 10^{-4}$  | $2.6 \times 10^{-9}$   | $1.9 \times 10^{-3}$ |
| <i>KAFB Landfill</i>   | $5.7 \times 10^{-5}$   | $6.7 \times 10^{-6}$               | 0                               | $2.6 \times 10^{-3}$   | $1.2 \times 10^{-8}$            | $9.8 \times 10^{-7}$ | $2.9 \times 10^{-6}$     | $5.8 \times 10^{-9}$  | $2.4 \times 10^{-3}$  | $2.3 \times 10^{-6}$   | $5.0 \times 10^{-3}$ |
| <i>Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC)</i> | $4.1 \times 10^{-4}$   | $4.6 \times 10^{-5}$               | 0                               | $1.5 \times 10^{-2}$   | $8.3 \times 10^{-10}$           | $4.0 \times 10^{-6}$ | $7.5 \times 10^{-6}$     | $9.9 \times 10^{-10}$ | $7.4 \times 10^{-4}$  | $1.6 \times 10^{-7}$   | $1.6 \times 10^{-2}$ |
| <i>Loop Housing</i>  | $2.8 \times 10^{-5}$   | $3.2 \times 10^{-6}$               | 0                               | $1.4 \times 10^{-3}$   | $1.7 \times 10^{-9}$            | $6.0 \times 10^{-7}$ | $1.9 \times 10^{-6}$     | $5.8 \times 10^{-9}$  | $7.0 \times 10^{-3}$  | $3.5 \times 10^{-7}$   | $8.4 \times 10^{-3}$ |

**Table D.2–9. Summary of Dose Estimates to each of the SNL/NM Receptors from Reduced Operations Alternative Emissions from each SNL/NM Facility (continued)**

| RECEPTORS                                       | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|---|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <i>Lovelace Hospital</i>                        | $2.5 \times 10^{-4}$   | $2.7 \times 10^{-6}$               | 0                               | $1.3 \times 10^{-3}$   | $3.3 \times 10^{-10}$           | $7.2 \times 10^{-7}$ | $2.4 \times 10^{-6}$     | $1.3 \times 10^{-9}$  | $1.2 \times 10^{-3}$  | $6.8 \times 10^{-8}$   | $2.8 \times 10^{-3}$ |
| <i>Manzano Offices<br/>(Fire Station)</i>       | $8.2 \times 10^{-5}$   | $9.5 \times 10^{-6}$               | 0                               | $3.3 \times 10^{-3}$   | $2.1 \times 10^{-10}$           | $1.2 \times 10^{-6}$ | $4.9 \times 10^{-6}$     | $5.1 \times 10^{-10}$ | $3.5 \times 10^{-4}$  | $4.3 \times 10^{-8}$   | $3.8 \times 10^{-3}$ |
| <i>Maxwell Housing</i>                          | $3.9 \times 10^{-5}$   | $4.3 \times 10^{-6}$               | 0                               | $1.2 \times 10^{-3}$   | $2.4 \times 10^{-10}$           | $9.0 \times 10^{-7}$ | $2.3 \times 10^{-6}$     | $1.0 \times 10^{-9}$  | $9.4 \times 10^{-4}$  | $4.8 \times 10^{-8}$   | $2.2 \times 10^{-3}$ |
| <i>National Atomic Museum</i>                   | $3.7 \times 10^{-5}$   | $4.0 \times 10^{-6}$               | 0                               | $1.8 \times 10^{-3}$   | $2.6 \times 10^{-9}$            | $1.0 \times 10^{-6}$ | $2.1 \times 10^{-6}$     | $5.2 \times 10^{-9}$  | $7.2 \times 10^{-3}$  | $4.0 \times 10^{-7}$   | $9.0 \times 10^{-3}$ |
| <i>Pershing Park Housing</i>                    | $2.3 \times 10^{-5}$   | $3.1 \times 10^{-6}$               | 0                               | $1.4 \times 10^{-3}$   | $8.9 \times 10^{-10}$           | $5.3 \times 10^{-7}$ | $1.7 \times 10^{-6}$     | $3.2 \times 10^{-9}$  | $3.5 \times 10^{-3}$  | $1.8 \times 10^{-7}$   | $4.9 \times 10^{-3}$ |
| <i>Riding Club</i>                              | $1.5 \times 10^{-4}$   | $2.0 \times 10^{-5}$               | 0                               | $6.2 \times 10^{-3}$   | $4.4 \times 10^{-10}$           | $1.8 \times 10^{-6}$ | $5.5 \times 10^{-6}$     | $8.5 \times 10^{-9}$  | $4.5 \times 10^{-4}$  | $8.6 \times 10^{-8}$   | $6.8 \times 10^{-3}$ |
| <i>Sandia Base Elementary</i>                   | $2.4 \times 10^{-5}$   | $2.6 \times 10^{-6}$               | 0                               | $1.2 \times 10^{-3}$   | $1.1 \times 10^{-9}$            | $6.1 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $3.2 \times 10^{-9}$  | $4.1 \times 10^{-3}$  | $2.1 \times 10^{-7}$   | $4.1 \times 10^{-3}$ |
| <i>Sandia Federal Credit Union</i>              | $3.8 \times 10^{-5}$   | $4.3 \times 10^{-6}$               | 0                               | $1.9 \times 10^{-3}$   | $3.3 \times 10^{-9}$            | $6.9 \times 10^{-7}$ | $2.1 \times 10^{-6}$     | $9.7 \times 10^{-9}$  | $1.2 \times 10^{-2}$  | $6.8 \times 10^{-7}$   | $1.4 \times 10^{-2}$ |
| <i>Shandiin Day Care Center</i>                 | $3.5 \times 10^{-5}$   | $3.9 \times 10^{-6}$               | 0                               | $1.7 \times 10^{-3}$   | $1.6 \times 10^{-9}$            | $9.7 \times 10^{-7}$ | $2.0 \times 10^{-6}$     | $3.5 \times 10^{-9}$  | $4.6 \times 10^{-3}$  | $3.1 \times 10^{-7}$   | $6.3 \times 10^{-3}$ |
| <i>Sunport (Bldg. 1064)</i>                     | $3.2 \times 10^{-5}$   | $3.6 \times 10^{-6}$               | 0                               | $1.6 \times 10^{-3}$   | $8.9 \times 10^{-10}$           | $8.2 \times 10^{-7}$ | $2.8 \times 10^{-6}$     | $2.3 \times 10^{-9}$  | $2.0 \times 10^{-3}$  | $1.8 \times 10^{-7}$   | $3.6 \times 10^{-3}$ |
| <i>Sunport (Bldg. 760)</i>                      | $4.1 \times 10^{-5}$   | $7.7 \times 10^{-6}$               | 0                               | $3.7 \times 10^{-3}$   | $1.3 \times 10^{-9}$            | $1.0 \times 10^{-6}$ | $3.2 \times 10^{-6}$     | $2.4 \times 10^{-9}$  | $1.7 \times 10^{-3}$  | $2.6 \times 10^{-7}$   | $5.4 \times 10^{-3}$ |
| <i>Technical Onsite<br/>Inspection Facility</i> | $5.8 \times 10^{-5}$   | $6.5 \times 10^{-6}$               | 0                               | $2.8 \times 10^{-3}$   | $2.5 \times 10^{-8}$            | $9.7 \times 10^{-7}$ | $2.7 \times 10^{-6}$     | $6.9 \times 10^{-10}$ | $3.9 \times 10^{-3}$  | $4.8 \times 10^{-6}$   | $6.8 \times 10^{-3}$ |
| <i>Veterans Affairs<br/>Medical Center</i>      | $4.8 \times 10^{-5}$   | $5.0 \times 10^{-6}$               | 0                               | $2.5 \times 10^{-3}$   | $4.2 \times 10^{-10}$           | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $1.4 \times 10^{-9}$  | $1.4 \times 10^{-3}$  | $8.5 \times 10^{-8}$   | $4.0 \times 10^{-3}$ |
| <i>Wherry Elementary School</i>                 | $2.9 \times 10^{-5}$   | $3.2 \times 10^{-6}$               | 0                               | $1.5 \times 10^{-3}$   | $8.3 \times 10^{-10}$           | $7.9 \times 10^{-7}$ | $2.5 \times 10^{-6}$     | $2.4 \times 10^{-9}$  | $2.9 \times 10^{-3}$  | $1.6 \times 10^{-7}$   | $4.5 \times 10^{-3}$ |
| <i>Zia Park Housing</i>                         | $3.7 \times 10^{-5}$   | $4.1 \times 10^{-6}$               | 0                               | $1.9 \times 10^{-3}$   | $1.8 \times 10^{-9}$            | $8.9 \times 10^{-7}$ | $2.9 \times 10^{-6}$     | $4.2 \times 10^{-9}$  | $3.9 \times 10^{-3}$  | $3.5 \times 10^{-7}$   | $5.8 \times 10^{-3}$ |

**Table D.2–9. Summary of Dose Estimates to each of the SNL/NM Receptors from Reduced Operations Alternative Emissions from each SNL/NM Facility (concluded)**

| RECEPTORS                                  | SPR<br>(Bldg.<br>6590) | ACRR<br>(Mo-99)<br>(Bldg.<br>6588) | ACRR<br>(DP)<br>(Bldg.<br>6588) | HCF<br>(Bldg.<br>6580) | HERMES<br>III<br>(Bldg.<br>970) | MWL                  | RMWMF<br>(Bldg.<br>6920) | ECF<br>(Bldg.<br>905) | NGF<br>(Bldg.<br>870) | RITS<br>(Bldg.<br>970) | TOTAL                |
|--|------------------------|------------------------------------|---------------------------------|------------------------|---------------------------------|----------------------|--------------------------|-----------------------|-----------------------|------------------------|----------------------|
| <b>OFFSITE POTENTIAL MEI (mrem/yr)</b>     |                        |                                    |                                 |                        |                                 |                      |                          |                       |                       |                        |                      |
| <i>Albuquerque City Offices</i>            | $5.7 \times 10^{-4}$   | $9.7 \times 10^{-6}$               | 0                               | $4.1 \times 10^{-3}$   | $4.4 \times 10^{-10}$           | $6.4 \times 10^{-6}$ | $2.2 \times 10^{-5}$     | $1.3 \times 10^{-8}$  | $1.0 \times 10^{-2}$  | $9.0 \times 10^{-8}$   | $1.5 \times 10^{-2}$ |
| <i>East Resident</i>                       | $3.5 \times 10^{-6}$   | $3.8 \times 10^{-6}$               | 0                               | $1.4 \times 10^{-3}$   | $1.2 \times 10^{-12}$           | $4.3 \times 10^{-6}$ | $1.7 \times 10^{-5}$     | $1.2 \times 10^{-8}$  | $9.5 \times 10^{-3}$  | $2.4 \times 10^{-10}$  | $1.1 \times 10^{-2}$ |
| <i>Eubank Gate Area<br/>(Bldg. 8895)</i>   | $3.1 \times 10^{-5}$   | $7.1 \times 10^{-6}$               | 0                               | $2.8 \times 10^{-3}$   | $2.2 \times 10^{-9}$            | $4.9 \times 10^{-6}$ | $1.9 \times 10^{-5}$     | $1.9 \times 10^{-8}$  | $1.7 \times 10^{-2}$  | $4.5 \times 10^{-7}$   | $2.0 \times 10^{-2}$ |
| <i>Four Hills Subdivision</i>              | $3.6 \times 10^{-5}$   | $7.6 \times 10^{-6}$               | 0                               | $3.1 \times 10^{-3}$   | $6.9 \times 10^{-10}$           | $4.9 \times 10^{-6}$ | $1.9 \times 10^{-5}$     | $1.3 \times 10^{-8}$  | $1.0 \times 10^{-2}$  | $1.4 \times 10^{-7}$   | $1.0 \times 10^{-2}$ |
| <i>Isleta Gaming Palace</i>                | $8.2 \times 10^{-6}$   | $4.4 \times 10^{-6}$               | 0                               | $1.7 \times 10^{-3}$   | $3.3 \times 10^{-12}$           | $4.6 \times 10^{-6}$ | $2.1 \times 10^{-5}$     | $1.2 \times 10^{-8}$  | $9.6 \times 10^{-3}$  | $6.4 \times 10^{-10}$  | $1.1 \times 10^{-2}$ |
| <i>Northeast Resident</i>                  | $1.6 \times 10^{-5}$   | $5.2 \times 10^{-6}$               | 0                               | $2.0 \times 10^{-3}$   | $6.6 \times 10^{-11}$           | $4.5 \times 10^{-6}$ | $1.8 \times 10^{-5}$     | $1.2 \times 10^{-8}$  | $9.6 \times 10^{-3}$  | $1.4 \times 10^{-8}$   | $1.2 \times 10^{-2}$ |
| <i>Seismic Center (USGS)</i>               | $1.0 \times 10^{-5}$   | $4.6 \times 10^{-6}$               | 0                               | $1.7 \times 10^{-3}$   | $8.6 \times 10^{-12}$           | $4.4 \times 10^{-6}$ | $1.8 \times 10^{-5}$     | $1.2 \times 10^{-8}$  | $9.5 \times 10^{-3}$  | $1.8 \times 10^{-9}$   | $1.1 \times 10^{-2}$ |
| <i>Tijeras Arroyo (West)</i>               | $8.2 \times 10^{-5}$   | $1.2 \times 10^{-5}$               | 0                               | $5.3 \times 10^{-3}$   | $6.4 \times 10^{-10}$           | $7.5 \times 10^{-6}$ | $2.4 \times 10^{-5}$     | $1.3 \times 10^{-8}$  | $1.0 \times 10^{-2}$  | $1.3 \times 10^{-7}$   | $1.5 \times 10^{-2}$ |
| <b>POPULATION DOSE<br/>(person-rem/yr)</b> | $7.6 \times 10^{-3}$   | $1.2 \times 10^{-3}$               | 0                               | 0.461                  | $1.7 \times 10^{-8}$            | $6.16 \times 10^4$   | $3.24 \times 10^3$       | $4.19 \times 10^7$    | 0.322                 | $3.4 \times 10^{-6}$   | 0.80                 |

Sources: DOE 1997e, SNL/NM 1998a

ACRR: Annular Core Research Reactor

DP: Defense Programs

ECF: Explosive Components Facility

HCF: Hot Cell Facility

HERMES III: High-Energy Radiation Megavolt Electron Source III

KAFB: Kirtland Air Force Base

MEI: maximally exposed individual

Mo-99: molybdenum-99 and other medical isotopes production

mrem/yr: millirems per year

MWL: Mixed Waste Landfill

NGF: Neutron Generator Facility

rem: Roentgen equivalent, man

RITS: Radiographic Integrated Test Stand

RMWMF: Radioactive and Mixed Waste Management Facility

SPR: Sandia Pulsed Reactor

USGS: U.S. Geological Survey

**Table D.2–10. Calculated Dose Assessment Results for SNL/NM Operations Under No Action, Expanded Operations, and Reduced Operations Alternatives**

| DOSE TO RECEPTOR                     | LOCATION                     | ALTERNATIVE       |                                  |                    |
|--------------------------------------|------------------------------|-------------------|----------------------------------|--------------------|
|                                      |                              | NO ACTION         | EXPANDED OPERATIONS <sup>a</sup> | REDUCED OPERATIONS |
| <b>TOTAL DOSE MEI</b>                | KUMMSC                       | 0.15 mrem/yr      | 0.51 mrem/yr                     | NA                 |
|                                      | Eubank Gate<br>Building 8895 | NA                | NA                               | 0.02 mrem/yr       |
| <b>COLLECTIVE DOSE TO POPULATION</b> | Within 50-mi radius          | 5.0 person-rem/yr | 15.8 person-rem/yr               | 0.80 person-rem/yr |

Sources: SNL/NM 1998a, DOE 1997e

KUMMSC: Kirtland Underground Munitions and Maintenance Storage Complex

MEI: maximally exposed individual

mi: miles

mrem/yr: millirems per year

NA: not applicable

<sup>a</sup>If implemented, the Microsystems and Engineering Sciences Applications (MESA) Complex configuration would not change the dose assessment results under the Expanded Operations Alternative.